The Builder.

VOL. XIV.—No. 687.

ON Monday, the 31st of March, there was a large attendance of members and visitors at the Institute of British Architects, to witness the presentation of the Royal Medal for Architecture to Mr. Tite, Fellow, M.P. &c. including Sir C. Barry, Professor Donaldson, the Rev. R. Burgess, Messrs. Scoles, C. C. Nelson, Ferrey, Scott, Joseph Clarke, Hardwick, jun., H. Baker, W. P. Griffith, G. Pownall, S. Angell, Mylne, Christian, Bellamy, Penrose, Papworth, Bury, Porter, C. Barry, jun., S. Godwin, Mocatta, G. B. Williams, Garling, Edmeston, S. Wood, E. H. Martineau, J. Turner, Twining, Dr. Dickson, Bardwell, E. T. Parris, J. D. Harding, Lockyer, Cates, Kelsey, &c. &c.

The minutes having been read by Mr. Scoles, honorary secretary, the Fellows proceeded to ballot, and elected Mr. Frederick Marrable as Fellow; and Mr. J. K. Colling, Mr. Ignatius C. Scoles, and Mr. T. Roger Smith, as Associates.

Various donations were announced, including a finely-bound copy of David Roberts's "Egypt and Nubia," in three vols. from Mr. C. C. Nelson (whose liberality was properly eulogized), and the President proceeded to present the prizes adjudged by the Institute, with a few complimentary and congratulatory words to each, namely:—

To Mr. T. A. Britton, for his Essay "On the Timber-growing Countries of Europe and America," the Silver Medal of the Institute.

To Mr. L. R. Roberts, for his Design for a Town Mansion, the Soane Medallion.

To Mr. T. C. Sorby, for his Design for Courts of Law, a Medal of Merit.

To Mr. J. Blake, for his design for a Town Mansion, a Medal of Merit; and

To Mr. C. N. Beazley, student, for his Monthly Sketches, a Prize in Books.

The rewarded designs were exhibited in the meeting-room, and may be spoken of as most creditable to the skill and industry of their several authors.

The president, in addressing Mr. Tite, adverted to the advantages of sound sense and general acquirements, in addition to artistic ability; congratulated him on having gained the suffrages of his architectural brethren; and, with the full concurrence of Her Majesty, presented to him the Royal Medal.

Mr. Tite. in a very feeling speech, acknowledging gratefully the honour conferred upon him, referred to the part he had played in conjunction with the president, in effecting the coalition between the Architectural Society and the Institute.

Professor Donaldson afterwards read an able and interesting paper "On the Triumphal Arches of the Romans," which was illustrated by a number of drawings, and the meeting then adjourned. The paper described a Roman triumphal procession, and showed that the triumphal arch was a record in stone of the incidents and personages of the procession.

Amongst the objects exhibited was a beautifully executed model, by Mr. Thomas D. Dighton, of the buildings in new Victoria-street, Westminster, erected by Mr. Mackenzie.

MONUMENT TO THE LATE MR. PETER NICHOLSON.—The foundation-stone of a monument to be erected at the Carlisle cemetery, to the memory of the late Peter Nicholson, was to be laid on Monday last.

REVIEW OF THE BARRACK COMPETITION DESIGNS.

WE have not allowed a week to pass without giving a large amount of time to the drawings which are now being exhibited at Burlington House; but the present case is one of so extraordinary a nature, that we shall not attempt to prefer a judicial opinion on the whole competition. We must merely speak of impressions whilst travelling through the vast collection of designs, some of them numbering over thirty sheets in a set; and the great majority of the works the result of elaborate study, and affording valuable suggestions.

Whether the judgment of those who have been competitors could in such cases be made available, and would *secure* right decisions, can hardly yet be asserted; but we must say that the present case is peculiarly one that testifies to the view that similar study of the subject to that required in preparing drawings, is essential to the formation of an opinion, and is not easy to be procured in another way. During the last week the collection has been visited both by competitors and persons otherwise interested in the question of barrack-accommodation,—though by fewer in all than might have been expected. When, therefore, we notice persons of the class last mentioned, merely asking to be shown "what has gained the first prize," and then taking their way (though *not* without expressing wonder that so much labour should have been incurred); and when even those who competed are content with giving only an odd hour to the collection; when, in short, we see that the fact of the enormity of the demand made on one side, and the value of the squandered time and money on the other, have to be brought to the very knowledge of *both* parties, we shall not be surprised if we are misconstrued for any course we may take. So long as we have the sense of right, we do not fear animadversion, or even vulgar abuse,—whether we may have to refrain from opinions, or to express them. The letter which we print elsewhere, though written after longer study of the drawings than we had given last week, only corroborates what we then remarked,—or will at least show that we were not singular in the view we took. As to the matter of area of ground, another correspondent, indeed, draws our attention to what he regards as a decision that henceforth barracks will be "not connected with large towns, but detached from them; and that the probability is, that the barracks will be of considerable extent in those positions;" but we do not see that this justifies the extraordinary areas taken by some of the competitors. In the manufacturing districts we apprehend there will remain reasons for not withdrawing the barracks to a great distance; but in any case, were cost of ground not everywhere a consideration, is not the matter of compactness and free communication and supervision also important? The point of *number of stories*, also, is a question of expense, and distance of one part of the barrack from another. However, one of the most matured designs in the whole collection has an area vastly exceeding the thirty-four or thirty-five acres of the successful design.

The committee advertised for plans which should embody the recommendations contained in their report; and the discretionary power to architects, in regard to number and sizes of rooms, was limited to some matters of detail—few in number. The departments to be provided for in the infantry barracks, included the men's quarters; rooms for the married people; residence for the commanding officer, and rooms for the other officers, married and single; officers' mess-room and offices; also, officers' stables; rooms for the staff-sergeants, the ten pay-sergeants of companies, and the forty company-sergeants (or four to each company of 100 men); quarters for the band-master; sergeants' mess-room and offices; a washing-establishment; a drying-room for coats; a regimental library; a reading-room and librarian's quarters; a chapel to serve as school, an infants' school-room, and quarters for schoolmaster and schoolmistress; orderly and court-martial rooms; a band-practice room; a guard-house, near the principal gate, with lock-up and cells; a bakery near the barrack-master's and quarter-master's stores; shops for the master tailor, master shoemaker, and master armourer; also carpenter's and blacksmith's shops near the quarter-master's stores; barrack-master's stores, house for the fire-engine, and quarters for the barrack-sergeant; barrack-master's house just outside the barrack walls; quarter-master's stores; a drill or parade-ground, gravelled, measuring about 250 by 100 yards, or a little over five acres; covered spaces for drill in bad weather; a powder-magazine and shifting-room; a provost prison with twenty cells, and provost-sergeant's quarters; an hospital with its own wash-house, hospital-sergeant's quarters, orderlies' room, and an itch-ward, and a dead-house adjacent; the surgeon's and one of the assistant-surgeons' residences being near to the hospital; a canteen; a racket-court, ball-court, gymnasium, quoit and skittle grounds, and cricket-ground near to the canteen; gas-works (should there be none in the neighbourhood), and many other accessories.

The men's quarters had to be provided with the accommodation for sleeping, eating, and cooking, for ablution, and for cleaning accoutrements, and with other conveniences. Thus—without reference to the stables, riding-school, and particular requirements of cavalry barracks, to which we shall have again to refer—the subject is one that tests to the utmost the knowledge and skill of an architect. In providing the men's quarters, it seems essential—though sufficient stress has hardly been given to it in the report—to arrange the rooms so that the whole regiment may be turned out on the parade-ground at a moment's notice. This, it may be presumed, is a part of military discipline. In some districts of the country, also, as before referred to, where the troops have to be called upon occasionally to preserve the peace, minutes are on that score to be considered. Elongation of the quarters with reference to the parade, as opposed to the grouping them in block, would seem, therefore, the correct principle. At the same time, through-passages must be left for the purposes of the barrack. Further, the regimental strength of 1,000 men is divided into ten companies of 100 men each, and each company into four squads of twenty-five men each, with a sergeant to each squad; and this division and subdivision has to be observed in planning the quarters. It seems also to be admitted as desirable, that each squad should be divided in two dormitories, and Mr. Rawlinson, the author of an elaborate set of drawings marked with a geometrical figure and the motto "Hope," which we have alluded to above, but shall have to look at subsequently, goes so far as to contend for what is in effect a distinct room to each man. The necessity of accommodation for the six married privates of each company at a distance, being admitted, and the sergeant being accommodated so as to ensure him privacy with as little deduction as possible from his present supervision,— the improvements required in the men's department are chiefly greater space and ventilation in the barrack-room, with better provision for cooking and eating, and for ablution and cleaning. Anything that would interfere with the present system of living and sleeping in the same room, seems to be deprecated by most parties. A kitchen, or place where the men could cook and eat in the same room, is, however, not objected to: a distinct day-room is not desired. The dining-room kitchen, it is supposed, would serve for two squads; or the report says, "Should the dining-room be provided in any other manner, there is no reason why each kitchen should not cook the food of two companies; but it is not desirable that it should be used for a larger number, from the difficulty of giving the men their dinners hot, if they have to be carried any distance." This passage seems to have led to the departures from the general view of the committee, which are observable in some of the drawings.

The kitchens, it is laid down, should be in buildings detached, but connected by passages; and in most of the designs they are placed at the back, on the ground-floor, as are also in many cases the ablution-rooms and cleaning-rooms. There appears to us some defect in the instructions on these matters,—one question being whether it is necessary for the soldier to pass to such a distance in cold weather, and sometimes

through the open air, to perform his ablutions, and another, whether one of the reasons which prevailed against the admission of day-rooms, viz. the possibility of mislaying accoutrements, is not equally to be considered where the cleaning-rooms are provided as they are in some of the plans. The other conveniences are properly placed when attached to the departments of the companies, instead of being all together, and in remote positions. The system adopted is that of the trough and sluice, which really does not seem an objectionable one, and has been considered, in such cases, least liable to get out of order. The set of drawings by Mr. Rawlinson (No. 80), however, provides closets or soil-pans, under the idea that any other arrangement would be fatal to health. The alterations which he effected at Scutari were of so important a nature, that in less than a month the deaths were reduced from seventy and upwards a day, to not seventy a week. The diminution of fever cases may have been due to *several* of his alterations; — the supply of fresh air to the wards and corridors; the breaking up and cleansing of the general sewers, by which the foul air was prevented from being returned into the building; and the cleansing and deodorizing of the more foul abominations, which had, we presume, never been provided with any means of sluicing, had doubtless each one an importance, to which attention may well be paid in similar cases at home. The present "conveniences" in barracks are certainly quite sufficient to cause the quantity of sickness—six per cent.—which has to be provided for by the hospital. The soil-pans which are in use at Scutari, we learn, do not get out of order, as was predicted to Mr. Rawlinson; and at the town of Alnwick, in Northumberland, 800 of these "pans" have been fixed, and are said to be in constant order—even especially so with the poor Irish.

The principle in the second premiated design, to which we referred last week, is the provision of day-rooms apart from the kitchens. This, we have said, was advocated by some of the witnesses, but was discountenanced in the Report. The several departments of the barrack are grouped into five blocks of building, each round a quadrangle. Portions of each are, however, of one story only; and the block is generally open at the back, above the ground-story. The masses of the building are effective in grouping. In the central block, the angles are appropriated to the orderly-rooms, non-commissioned officers, residence of the surgeon, the bandmaster, and other rooms; the general range of ground-story contains day-rooms, and pay-sergeants' rooms, whilst the one-story buildings at the back are appropriated to kitchens, coal-stores, cleansing-sheds and conveniences—yards being attached. The interior court is marked as a gymnasium, to be roofed with iron and glass if required. The dormitories are in two upper floors, with a staircase to each company; but a narrow way through, runs across the rooms from end to end of the range. Bath-rooms and washing-rooms are attached, and the sergeants have separate rooms; many of these, however, having the bath-room between them and the dormitory. In the top story, at the angles, are fencing-rooms. In the main front, in the centre, are the library, and on the top floor, linen-rooms. At the back of the quadrangle, occupying a large space, are the stores and workshops, round a court of their own, and here also are the barrack-sergeant's quarters.—One of the smaller blocks of building at the front—that to the left in looking at the plan—serves for the officers' quarters; the unmarried being next to the parade, and the married on the opposite side,—the commanding officer being, with doubtful advantage, in the most retired quarter. The mess-rooms form the central feature in the front. The barrack-master's house is at the back, in the same block. The stables occupy the back of the square, as in the case of the stores in the larger quadrangle. The space appears to be confined, but they are of one story chiefly.—The corresponding block at the back is the hospital, and that to the right contains the prison, coal-store, magazine-yard, and gasometer. The quadrangle to the right, corresponding with the officers' quarters, is for the non-commissioned officers and privates. The chapel-school forms a feature in the centre of the front, corresponding with the officers' mess-rooms: the school-master and school-mistress have rooms at the angles; the back affords space for the canteen, the wash-house, and a swimming-bath; and the children's play-ground occupies the central area. Bowling-green and skittle-grounds are adjacent. The entrance to the barrack is opposite the middle of the parade. The back entrance seems to us to have been an omission by accident. The objections to the plan are very fairly put by our correspondent.

The third premiated design has the parade-ground placed endwise, and of unnecessary dimensions. The main line of buildings opposite the entrance has the dormitories in two upper stories, back and front of a covered space for drill, which is 950 feet long by 80 feet wide, and roofed over with a semicircular ridge-and-furrow roof. The rooms look on to this, with arcades and galleries reached by staircases at intervals; and there are larger archways through, for access to the buildings at the back of the barrack. The ground-level is appropriated to staff-sergeants' residences, stores, and shops; the dining-rooms (each for forty-eight men, with small kitchens) are in the same level; the kitchens for the men living on both sides being alike placed at the back, where also are the various conveniences. The length divides into separate sections for the companies. Rails for the conveyance of stores are contemplated along the drill-ground, and through to the back of the barrack. The officers' quarters are to the left of the grand parade, with mess-rooms in a detached building; and the chapel-school is on the right. At the farther part of the ground are the racket-court, prison, and various stores to the left; married men's quarters, wash-house and bath, in the centre; and the hospital is to the right. Farther beyond the hospital are the girls' and infants' schools,—thus at a distance from the principal school, which is at the front. Whilst praising the effort which is displayed in these drawings, we must say that defects in the planning will be discovered in them. We willingly accede to the architect's wish that we should contradict the report that any member of the committee, or any other hand than his own, had anything to do with the preparation of the design and drawings. It is not difficult to see how the report originated. The report of the committee to Lord Panmure says:—"The committee unanimously selected the plan 'Alpha' for the third place, as possessing merit of arrangement, and exhibiting the application of a glass-roofed covered space for the purposes of drill and recreation." The covered space itself is no doubt treated better than in some designs where a similar expedient has been attempted.

No. 4, with the motto, "What is worth doing, is worth doing well," has a parade-ground endwise; and at its farther end the companies' rooms, five companies at the back, and five at the front, with kitchens and conveniences intermediate, and covered spaces for drill at the ends. The hospital is at one end of the same range, the rooms for married men are at the other, and the prison is at the back. Flanking the parade are the officers' quarters, and stores, grouped in detached blocks.

The design No. 5, "Victoria," is less striking than the preceding, but differs from them, inasmuch as the men's quarters are all placed next the parade,—forming three sides of the quadrangle. The officers' quarters occupy the first portion of the wings,—and the quarters of the married men are at the internal angles. The chapel-school, stores, prison, &c. form a range of detached buildings behind; and the hospital is further back. The companies' quarters consist each of two stories of dormitories, two rooms in each floor, with sergeants' rooms close adjoining. On the ground level, the dining-room, with cooking space attached, together with ablution-rooms, forms a detached building in the middle of a yard. It is reached by a covered way, and adjoining it are cleaning sheds and conveniences.

No. 6,—"Vi et Armis," Mr. Knowles, jun. is one of the designs which are remarkable for their external character. This, in the present case, may be called a castellated version of the style of the building at the end of Chancery-lane. Besides the ordinary parade, there is a space between the first and the grand entrance, so that a façade of some importance is obtained. The lower story has a loggia of arches and columns, and there is a prominent central gateway. This range of buildings forms the officers' quarters. The actual parade-ground is placed endwise, and the men's rooms are opposite the entrance: the hospital is on the left (looking at the plan) and the married men's quarters on the right, with the chapel-school. The companies' rooms are arranged with large open courts. Large spaces in the plan are covered with ridge and furrow roofing.

No. 7,—"Si Fortuna Juvat," Messrs. Aickin and Capes, covering an area measuring 950 feet by 790 feet, with a parade-ground of the proper size, adopts an arrangement, which, though peculiar, escapes many of the disadvantages of other plans where the entrance is at the end. Though the entrance to the parade is placed in the manner stated, the companies' rooms are along one side of the parade; and at the back they have a long covered drill-ground, on the further side of which again are store-shops, and back entrance. The lavatory and kitchen arrangements shown in the detailed drawings, manifest knowledge of this branch of the subject. The canteen, and covered grounds for amusements, staff-sergeants' residences, and stores, are at the right of the entrance and guard-house. Left of the gate is a large cricket-ground, with a covered way round. In the centre of the same side are the officers' quarters, and behind them, across a square, are the mess-rooms and commanding officer's residence, as a detached building. At the end of the parade, opposite the entrance, are the chapel-school, the married men's quarters, the washing department, and the infirmary. The style of the buildings is Gothic, somewhat ornate in character. The plan may not attract attention; but deserves it. Much is provided on a very small space.—In No. 8,—"Ars, armis adjutrix,"—the soldiers' quarters open to a covered drill space, in which are bracketted galleries. The kitchens are grouped all together, and some of them are in consequence at considerable distance from companies.

We have scarcely touched the mass of drawings which there are in this marvellous collection, but are reluctantly compelled to defer the subject. Amongst the works which remain are some of the most elaborate of the sets of drawings, and some plans in which the principle of distribution is that which is generally considered to meet best the peculiarities of the case. That principle, we believe, is involved in the importance of keeping the whole of the quarters bordering upon the parade, and yet of leaving a sufficient number of through-passages. Other plans follow a more concentrated principle of arrangement; and whether these designs were considered wholly out of court, or not, some of them certainly are not devoid of particular advantages which the first are compelled to sacrifice.

The present occasion should be one of great value in settling the initial principles of planning for barrack accommodation. To settle similar points in structural works of other classes, though apparently an indispensable step, is often troublesome from the difficulty which architects and their employers have in comprehending one another. What will here be learnt, and for which ample opportunity should be given by the exhibition of the drawings, will be useful for all time; and though the knowledge may have been obtained at some cost to our profession, we hope it will save much future loss to the country.

THE BARRACKS COMPETITION: STRICTURES BY A COMPETITOR.

Now that the entire collection of designs is formally submitted to the public and all concerned for criticism, would it be out of place for a competitor to offer some remarks upon the decision? I may very likely be actuated by something like envy, however earnest my endeavour may be to judge impartially; but so vast is the maze of drawings offered for examination at Burlington House, and so complex is the subject involved, that it is, perhaps, impossible for any general observer, except it be a compe-

titor, who is necessarily familiar with the problem, to escape bewilderment. I promise to avoid all allusion to my own design (except that I cannot help referring to my abstract principles); and if your readers will accept my permission to make due allowance for the partiality of a defeated candidate, I think I may proceed without further apology. I send you privately my name, and the number of my own design, as a guarantee of good faith; and I leave it to you to inquire into my motives by these means before publishing my remarks.

A Blue Book of 200 folio pages was given to the competitors by way of their instructions, being the Report of a War-office Committee (the judges also in the competition), upon Barrack accommodation, its many defects and many requirements, and the evidence in detail which they had taken upon the subject. In this we possessed such unusually minute and precise data for our guidance (with an order to view any barrack buildings throughout the country), that one's only chance of positive error seemed to be a neglect to study the evidence thoroughly. It was a work of labour and generalization, no doubt, to digest this Blue Book properly, but it was nothing more: the problem became, I think, in all important points, as plain as possible.

Let me confine myself to the infantry barrack in the mean time. Here the Blue Book simply details an array of the many and gross defects of all our present barracks, with suggestions for their remedy. What will "Administrative Reformers" say if I can show that there is but one design (of any importance) in the whole competition which adheres tenaciously to the existing system with all its faults, and that to this design there is deliberately awarded the first premium? If this be really the case, it exhibits our veneration for existing institutions in a form which was scarcely to be looked for.

It will be discovered, on a careful scrutiny, that although the designs now exhibited are supposed to be not arranged in any exact order of merit (except those premiated), yet that the practically sound suggestions are generally to be found towards the beginning of the numerical order, and that vital errors and fantastical ideas become more prevalent as the numbers progress. It appears to me, for instance, that the first great line of demarcation cuts off all plans wherein the erroneous principle of lighting the barrack-room from the *side*, instead of the *end*, is an essential. This line does not leave many designs above it; and in fact, any one who desires to come to a ready conclusion upon the merits of the committee's selection, need not trouble himself with more than the first ten designs in the series.

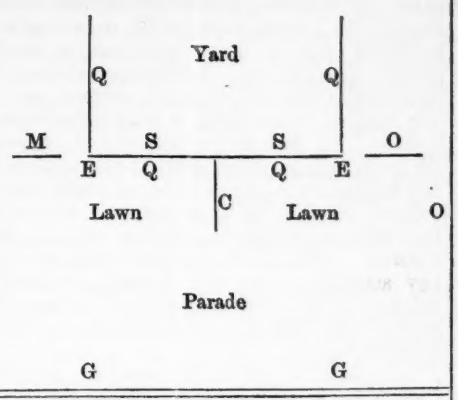
Let it be borne in mind that *the general arrangement of plan* is after all the sole problem: the mere details of structure are any one's work in such a subject as this. And it is worthy of remark, that if the committee had called for general plans alone, with descriptive particulars in writing, they would have saved themselves a good deal of trouble in examining the real merits, and they would have saved the competitors a thousand yards of paper, and more than *one* thousand pounds in money.

The utopian model barrack of the blue book (now, alas! all a dream) was to be merely a common-sense plan of the following divisions,—namely, quarters for ten companies of 100 men, with dining kitchens, washing-rooms, &c. in connection; suitable provision for sergeants and married men; quarters for the officers; chapel-school, library, and orderly rooms; offices (namely, stores, workshops, canteen, bakery, &c.), washhouses and baths, hospital, prison, a parade or drill-ground, and guard-house, and some shelter for drill in bad weather. I wish to compare the first few designs together upon the most important of these subjects.

As to the *parade-ground*, the instructions specify the dimensions of 250 by 100 yards, which (allowing for a trifling excess on any account) becomes just *six acres*. If the entire establishment is to be capable of anything like effective individual control (and in all weathers), one might imagine that, with a single item of six acres to begin with, it would be considered desirable to economise space, to beware of unmanageable area. Now the design No. 1 (the first premium plan), and the one which we are to understand will in its essentials be the model for the kingdom), incloses within the barrack-wall positively upwards of *thirty-four acres!* and it cannot possibly be much reduced. No. 2 represents 20 acres, which must be increased to correct a vital error. No. 3 takes 30 acres; No. 4, apparently, as much. In the parade-ground itself, No. 1 gives upwards of *twelve acres*, properly speaking: in No. 2 it is only two-thirds of the required extent; and this, moreover, cannot be cured except through a dilemma of desperate expedients (either by lengthening the parade-ground, so as to lie endwise towards the quarters, or again by widening it so as to separate the blocks of buildings to a most inconvenient extent): in No. 3 the parade-ground occupies 13 acres; and in No. 4, an extravagant quadrangle is reduced to the limit by the impracticable idea of surrounding it with ornamental lawns. But there are several designs which enclose altogether only 17 or 18 acres (which, after all, is a sufficiently large minimum in practice), and afford notwithstanding the most abundant space for every purpose, and with no inferior arrangement of the buildings, I think, but quite the reverse. Take No. 5, for instance, and correct the error of its endwise parade-ground, and you have what I mean. But this design makes no show among the tremendous areas around it, although it actually gives to every man, woman, or child in the barrack a space of 600 feet of ground. It is all very well to handle acres in a plan as if they were dominoes, but think of this,—Lincoln's-inn-fields and Russell-square are as nothing; Colney Hatch, the Houses of Parliament, and the Crystal Palace, are altogether outdone: look at the whole length of Pall-mall from St. James's-street to the Haymarket (nearly one-third of a mile), and the whole breadth from Pall-mall to Jermyn-street (one-sixth of a mile), and you behold the precise dimensions of the enclosure of the model plan to accommodate a single regiment of soldiers. Just look at this in a map of London.

The accompanying sketches will serve to give an idea of the general principles of plan of the first five designs, in order to illustrate the observations which follow. (The sketches are not to scale.)

No. 1.



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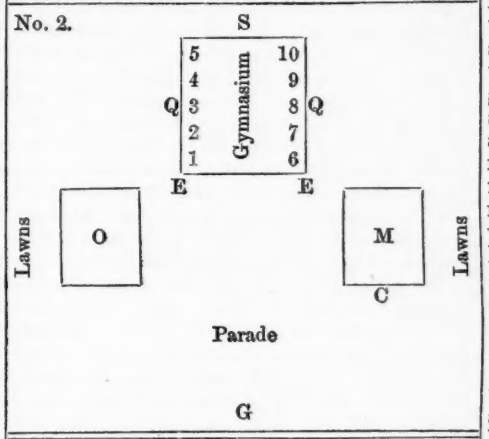

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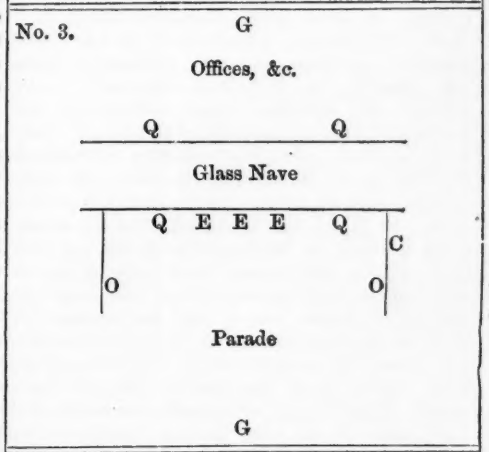

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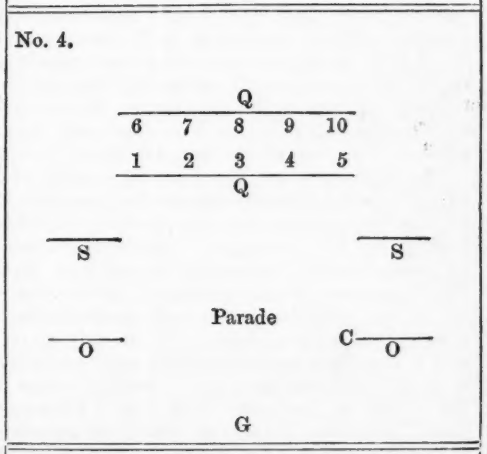
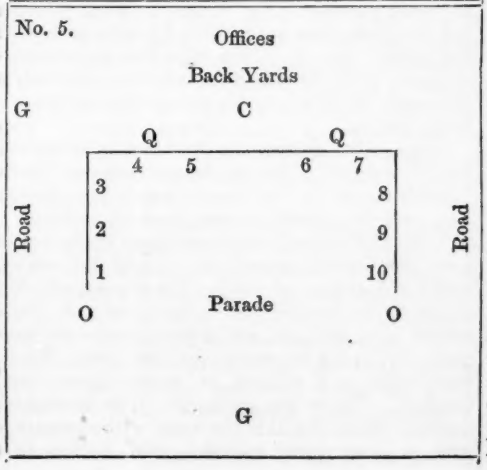


No. 5.



Q. signifies quarters for the men.
M. Married quarters.
O. Offices.
C. Chapel.
E. Entrances to quarters.
S. Stores and other offices.
G. Gates.

The numerals are the order of companies.

In the *Men's Quarters* we have the chief question of the problem. It seems to me that the first desideratum is to dispose the men so that the whole battalion shall turn out on parade with perfect readiness. I think also that the whole of the barrack-rooms should look out upon the parade-ground, if possible. In No. 1, only four of the ten companies so look out; in No. 2, only two I think; in No. 3, we may almost say none; in No. 4, five companies; in No. 5, and many others, *all*. In No. 1, again, the quarters being disposed as a hollow square, with one side towards the parade-ground, the whole of the men have to pass out and in at the two front corners E E: thus 500 men have one single entrance, and 400 of them go up and down one staircase (for the back staircase is of no practical account in most matters). In No. 2 also, although every company has its own staircase, yet there is the serious disadvantage of a common corridor for five companies, and the practical means of entrance and exit are not much better than in the last. In No. 3 the question of access is mainly sacrificed. In No. 5 every company has its own doorway opening directly upon the parade-ground; and No. 4 and many others exhibit modifications of the same sound principle. In No. 1, when the men pour out to parade in 500 at each corner, they actually are separated from the parade-ground by a *lawn* some 50 yards wide, with *roads*, not across, but *round it*. The soldier, who falls in on the extreme flank, in passing from his barrack-room (if this be at the corresponding extremity) to his rank—always expected to be a prompt move-

ment—has to walk *one-fifth of a mile*. Nos. 2 and 3 are less objectionable here, but still sufficiently so: whereas, in Nos. 4 and 5, and very many others, but for endwise parades where they occur, every man may be said to step out into his place at once.

As to the detail arrangements of the quarters, the three premiated plans present unmistakeable evidence of a most strange and sad system of selection having been resorted to. The blue-book, among other things, alludes to certain various ideas of plan. First, it holds up to reprobation the old "barrack-room" system,—whereby the men are put into a long range of rooms opening successively on a corridor at one end, and lighted solely from the other, with a cookery in immediate conjunction, on all floors alike, and some awkward tables in the corridor for their meals. Secondly, it canvasses the "day-room" principle, whereby the barrack-rooms are to become dormitories only, and a distinct day-room is to be provided apart: this, however, the report disapproves of. Thirdly, the glass-roof, or Crystal-Palace principle is vaguely spoken of as available for covered ways, or covered yards, or the like. Fourthly, there is the system recommended by the committee, with improved barrack-rooms and conveniences, "dining-kitchens," improved classification, and, for this end (as laid down by Major Jervois himself), separate blocks of buildings complete for the several companies. This last system is the prevailing principle throughout the whole exhibition of designs: in it, the great majority of competitors behold the only key to the problem. But, mark the result: it is wholly set aside: the Crystal-Palace principle—dragged in neck and shoulders as it must be,—is awarded a prize in No. 3: the "day-room" principle, specifically disapproved in the report, is awarded a prize in No. 2; and the one solitary project which offers to conserve the old "barrack-room" system, and perpetuate all its evils, is put in the place of honour, as if to pronounce the whole of this important competition as a failure or a farce. Nos. 1, 2, and 3, instead of representing degrees of practical improvement, are all at utter variance with each other, have nothing in common, are incapable of any amalgamation, and, if my arguments be correct, their defects are essential and vital errors, which cannot be remedied but by the entire abandonment of their fundamental principles of plan.

One more defect of No. 1, under this head, is the following:—The men are specified to be quartered either in squads of twenty-four, or half-squads of twelve: the evidence points to the division for twenty-four, with an arrangement for subdivision, if desired, for twelve. No. 1 has all its barrack-rooms made for twelve, without the possibility of resorting to the other mode, except by having the rooms lighted from the side, which would put the design at once below the line of merit.

As to the *sergeants' quarters*, the first question is to provide separate rooms for the company sergeants, attached to the several barrack-rooms, but effectually separated for the privacy of the sergeant and his wife, inasmuch as the manners and conversation of the barrack-room are found to be of a strong savour. The old system gives the sergeant and his wife a little corner in the barrack-room within a screen; and this is one of the especial evils denounced by the blue-book. Would it be believed that the only design which retains this arrangement is No. 1? The good woman is to have for her new home a compartment (with no observable fireplace, by the bye) enclosed *between* barrack-rooms, surrounded on all sides but one by screen partitions a little higher than her head, and having all the talk of a hundred "single" men floating above that level in full chorus. Or suppose we trace her route in passing from the canteen, for instance, to this agreeable retreat in the further wing. She enters by the corner-hall, where 500 men pass out and in, and where a given proportion of that number are lounging: she passes along a corridor of nearly 500 feet, through stores' departments, and the like, to the other corner-hall of 500 men; or she may here prefer to take the open air through the back yards and racket-court, and pass the eighty conveniences, &c: then she goes up the public staircase, used by 400 men; then passes along the private corridor of 100 men, her company, 226 feet long; then enters, and passes through the barrack-room itself, to which her sanctuary pertains; then, lastly, and no doubt gladly, gains admission to that peaceful enclosure itself, a little out of breath perhaps, and it may happen, occasionally, a little out of countenance. In, perhaps, the majority of designs, the good woman passes quietly, and with perfect facility, to a proper and comfortable room, without meeting (at least in-doors) one man but of her own company, and that only on the staircase: when the door is shut, she and her husband may converse without being overheard; and the worthy sergeant shall have all needful control over the adjoining barrack-room notwithstanding.

In respect of *married quarters*, the instructions direct that the married soldiers, with their families, shall have a location by themselves, apart from the main quarters. Sixty or more soldiers' wives, all clustered together in this way, may become not only a noisy republic, but perhaps an independent one: moreover, this removal of sixty of the soldiers from their companies (to avoid which in many barracks common decency itself is avowedly sacrificed) may prove disadvantageous to discipline. Various attempts are exhibited to overcome these points, but not, I think, in any of the premiated designs.

The *offices*, that is to say, the stores for provisions, clothing, bedding, coals, arms, and accoutrements, the bakery, the canteen for malt liquor and groceries, the workshops for tailors, shoemakers, armourer, carpenter, and blacksmith,—all these for the supply of some 1,200 persons, are not easily disposed of: they are enough to fill a small street of shops, and their convenient arrangement is a most essential question in the problem. Carts are passing to and fro continually: the colonel will not have these cutting up his parade-ground, or appearing there at all: they must come and go without difficulty and without observation, as the butcher, the baker, the milkman, the dustman, come modestly to one's back door. In No. 1, the ground-floor of the centre main building is indiscriminately cut up into these offices, intersected by the principal corridor of intercommunication of the building, and approachable, not by any rear access, but from the front gate along the end of the parade, past one of the entrance-halls for 500 and its little crowd, past the canteen and its little crowd, round by the back, into and across the back yards of the men, past the racket-court, and the privies, and so at length to the stores, a route in all of very nearly *half a mile*. In No. 2 it is similar, except that the carts pass by the more elegant route of a sweeping ornamental roadway through extensive lawns. In No. 5 we have the rear gate, the back yards, and the offices in line, "out of the way, but handy."

The *back yards* are the lounging-ground of the men (and soldiers are very fond of lounging), and the thoroughfare for the general domestic business of the community: this seems to be an indispensable principle in barrack life. In No. 1 there are no back yards, but the interior of a square, with the privies and urinals in the middle, in clusters of forty, and the only cart-way to the offices across their very midst; which is a confused arrangement, if nothing more. No. 2 has no backyards at all: the "Gymnasium," especially if covered, would not answer any such purpose. No. 3 has no back yards, but its great glass nave. No. 4 is also wide of the mark. No. 5, if the side roadways were widened, and the offices somewhat differently arranged, seems to exhibit the proper principle in perfection.

Some other defects in No. 1 may now be briefly noticed. To go from some of the barrack-rooms to the conveniences is a very long walk: to go under cover, in wet weather or at night (for there is no convenience of the sort near the barrack-rooms), is, to and fro, very nearly *one quarter of a mile*. The library, which ought to be central and retired, and near the school, is on one side, and adjoining one of the great and noisy entrances for 500 men. The washhouses are difficult of access from the quarters. There are no baths. The barrack-master's house is within the walls, with a private gate (a most signal mistake), and he has to walk a furlong to reach his stores. There are no covered play-courts. The distance of the further great entrance for 500 men is, from the front gate, *one quarter of a mile*, to which the way beyond to the furthest barrack-rooms makes no inconsiderable addition. The abominable "*tub*" in the barrack-room at night seems to be retained, as the men cannot be expected to go to the urinals in the yards. By the bye, talking of the "tub," there is one design which positively has this refined convenience delineated in the middle of the floor of every room, and marked openly and triumphantly with a "T.": it is a cavalry design, and it has the first premium!

The supposed merit of No. 1 appears to me to lie in the following points:—First, there is the close adherence to the old system; secondly, there is the alleged advantage of the principle of screen partitions, stopping short of the ceiling. But here any one who realizes the arrangement must surely perceive (see the plan on page 160, *ante*) that the principle is altogether inapplicable to barrack-rooms with women's apartments, washing-rooms, and corridor, all open to one ceiling, 226 feet long. The barrack-rooms, for instance, 28 feet long, are really lighted by only two windows at one end; for it is very little light that will come over the partition from the corridor, besides that one-third of the suite has not even this. The ventilation over the partitions is a fallacy, except that there will be abundance of draughts, and in winter bitter cold. The fumes of the dinner-tables will pervade the whole area for hours. The wash-rooms (needlessly numerous) will be dark, close, and offensive to the smell, and this last for the particular benefit of the serjeant's box adjoining. There may be another merit in saving lazy soldiers the trouble of going downstairs to their meals; but great cookeries for 100 men on the third floor above ground, are surely a greater evil in domestic economy.

No. 2, with numerous serious errors in detail, and with a fundamental departure from the instructions in its first principle, is, nevertheless, an able and successful plan, and must take a very high position among those which are beneath the proper line of merit.

No. 3 I cannot help thinking a vagary.

No. 4 brings us to more sound principles of plan, although there are various errors of detail which a more careful study of the blue-book would have prevented.

But in No. 5 (and I know nothing of its authorship) I fancy I perceive the proper solution of the problem. Certain deficiencies I have pointed out above, but all capable of easy remedy; and, although I am quite prepared to find that there are some essential principles which I, the critic, have myself overlooked, yet I feel extremely inclined to assert that there are no faults in this design but such as can be readily overcome without any departure from the model, and that this is not the case with any of the preceding.

No. 6 shows a most elegant plan, but with extravagant space and some of the defects above developed.

Nos. 7 and 8 are like No. 3,—one better, the other worse, but there is a plan attached to No. 8, designated as the embodiment of the suggestions of "an eminent and experienced person," which demands notice. The hand of the amateur is but too plainly discoverable in crude and confused details, but the general principle is the pith of the matter, and this is exactly that of No. 5.

Nos. 9 and 10 are good plans of their kind: but my remarks must be brought to a close.

As will be gathered from what I have said, after several day's attentive study of the designs, my firm opinion is this, that No. 1 is solely remarkable for a repudiation of all improvement upon the old system; that No. 2 is an able design, on a false basis; that No. 3 ought to stand nowhere; and that the really practical designs are altogether neglected. This, of course, is but my own opinion; but I have attempted to set it forth with such particulars as will enable others to judge for themselves.

I sincerely hope that what I have said will not be considered personally offensive by any party concerned. I impute no want of skill,

and no unworthy conduct: I only argue that a most serious mistake has been fallen into. I cannot tell what reasons may have governed the decision, but I think it is to be very much deplored for the public interest.

Allow me to say that I should be sorry indeed if my strictures on Mr. Morgan's design were to be considered a reproach upon his ability: if I were to speak of his cavalry plan, I think it would be very differently indeed.

In this matter it will be granted that I must subscribe myself ANONYMOUS.

ON THE MANUFACTURE OF CROWN AND SHEET GLASS.*

A TABLE of crown glass of to-day would scarcely recognise as of kindred origin a table of the earlier part of the present century. The principle of the process in each case was the same: it is the improvement of minute details that produces so different a result. To Mr. Hartley and Mr. Chance, who, during the years 1832 to 1836, gave to the manufacture of this glass their constant attention, is owing, in a great measure, its present status.

When the tables of crown glass are drawn from the kiln, they are covered with a whitish film or "hum." The history of this hum is curious. It arose, probably, in the first instance, from the deposition of sulphur from the fuel upon the surface of the glass. It thus became associated with the process of annealing, and buyers fancied that the more hum there was upon the glass, the better was the glass annealed. The manufacturers of crown glass, ever ready to accommodate themselves to the fancies of their customers, have taken the trouble to produce an additional hum, by the introduction of sulphur in the kiln. The members, however, of the Glass Jury of the Paris Exhibition, not being in the secret of this hum, stoutly maintained that glass thus clouded must be bad glass, and that the hum was owing to the exudation of the alkali.

In the warehouse, the tables are laid upon a "nest," or cushion, and are divided, by the diamond of the splitter, into two unequal parts, the larger half containing the "bull's-eye." The diameter of the table is measured on the nest, the usual size being now about 54 inches, and weighing 13 lbs. Tables have been made as wide as 70 inches, but the difficulty of manipulation, and the uncertainty of the result, render such sizes too costly to be general.

The splitter carefully examines each table before splitting it, and turns it round till he has brought it into the position in which he may split it to the best advantage, announcing at the same time its quality. The first quality is called "best"—*rara avis in terris*, the next seconds, then thirds, fourths, CC, CCC, or Irish, and tables containing any very glaring defects come under the denomination of "coarse."

These variations in quality depend on the presence or absence, number, and extent of those defects to which, even in the best regulated manufactories, glass is unavoidably liable. Perhaps the glass has been badly melted, and is seedy,—full, that is, of little vesicles, to which the rotary motion has given a circular shape; or, the gatherer may have enclosed air within his "metal," and a gatherer's blister is the result, or a pipe blister, or pipe-scales, or dust from the pipe-nose, or dust from the marver, or dust from the bottoming-hole, or dust from the nose-hole, or dust from the flashing-furnace, or bad bullions, or scratches, or music lines, may disfigure the table; or the glass may be crizzled, or curved, or bent, or hard, or smoky, or small and light,—defects to explain which, would be a long and dreary task. No wonder that tables of the best quality are few and far between, in some manufactories a forlorn hope never to be realised.

The difficulty of obtaining glass free from defects will account for what may at first astonish, —the fact that the value of a table of the highest quality is three times that of the lowest.

The defects enumerated, many as they are, are instantly detected, even through the obscuring hum, by the splitter, who not only can descry faults invisible to ordinary eyes, but can refer each fault to a particular stage of the process, and to a particular cause in that particular stage, and the faults are registered accordingly. The nomenclature of defects is much facilitated by the mapping out of the table into certain ideal divisions, derived from shapes assumed during various periods of the process. The centre lump is termed the bullion: round this lies the bottom; next the bulge; the shoulder; the top, and the rim, or the outermost edge of the circle.

Independently, however, of these defects, there are certain other disadvantages under which even a faultless table of crown-glass must unavoidably labour. The cutting of a circle into rectangular sheets must necessarily be attended with waste, while the bull's-eye confines those sheets to comparatively small sizes. Uniformity of thickness, also, except by the most skilful manipulation, is difficult of attainment. Wavy lines, termed music lines, forming a series of concentric circles round the bull's-eye, and owing to the treatment of the glass upon the marver, were formerly a common defect; but improvements in the process have in a great measure removed them.

On the other hand, extreme brilliancy of surface is a distinguishing characteristic of this glass, ascribed by some to the influence of the marver, by others to the effect of the flashing-furnace.

It is this brilliancy of surface which has enabled crown-glass to maintain in England its position against that formidable rival of which I must now briefly speak.

Imagine, as before, a lump of glass collected upon the end of the gatherer's pipe. For the metallic table or marver is now substituted a block of wood, so hollowed out as to allow the lump, when placed upon it, to be expanded by the blower to the diameter ultimately required. The block, during this operation, is sprinkled with water, to prevent the wood from being burnt, and from scratching the glass. From the block it is carried to the blowing furnace, which is accessible through a number of holes or openings, each hole being allotted to a single blower. In front of the furnace corresponding to each opening, is a stage or frame of wood, erected over a large pit or well about 10 feet deep, and these parallel stages are sufficiently apart to enable each blower to swing his pipe to and fro in a vertical plane, that the glass may run freely out, as the phrase is, to the required length. When the glass has been sufficiently heated in the blowing furnace, it is brought out, and swung round in a vertical plane, and also backwards and forwards; and the blower, at the same time, by blowing down the pipe, constantly keeps the lengthening cylinder full of air.

Uniformity of substance and of diameter is chiefly secured by the skill of the workman, who, when he finds the metal running out too freely, holds the cylinder vertically above his head, still keeping it well filled with air. These operations are continued until the cylinder has reached the length required. The diameter of the cylinder was determined by the wooden block, and remains the same throughout.

The next stage of the process is opening the end of the cylinder. The thinner kinds of glass are all opened by submitting the end of the cylinder to the fire, and at the same time forcing in air through the pipe and stopping up its aperture. The air is expanded by the heat of the fire, and bursts open the cylinder at the end; this being the hottest and most yielding part. The aperture thus made is widened out to the diameter of the cylinder, by subsequently turning the cylinder to and fro with the opening downwards.

The thicker kinds are opened by attaching a lump of hot glass to the end of the cylinder, which thus becomes the hottest and weakest part, and the air forced in by the blower as before bursts it open. The opening is then enlarged by cutting round it with scissors. If opened in the furnace, as in the first case, the ends of the thicker cylinders would be so thinned out that a considerable portion would be wasted.

The cylinder is now laid on a wooden rest, or "chevalet," and is easily detached from the pipe by the application of a piece of cold iron or steel to the neck of the glass near the pipe nose: the neck being hot suddenly contracts externally and breaks away from the cylinder. There still remains the cap or end of the cylinder, which is easily taken off by wrapping round the end of the cylinder a thread of hot glass, removing the thread and applying a piece of cold iron to any point which the thread covered.

On the continent, the operation of heating the glass cylinder is performed in the apertures of the melting furnace; but the obvious advantage of a separate furnace has induced, I believe, one French manufacturer to adopt the English plan, and others will probably follow his example.

The cylinder, as it now lies upon the chevalet, is little more in weight than two-thirds of the lump of glass which the gatherer collected on his pipe. The quantity left upon the pipe nose, with that which formed the cap of the cylinder, are nearly equivalent in weight to one-half the cylinder.

The finished cylinder is now split open by a diamond, which, attached to a long handle, and guided by a wooden rule, is drawn along the inside length of the cylinder, and should pass through or in the neighbourhood of some notable defect or group of defects, if such be present,—for defects thus brought to the edges of the subsequent plate of glass are of lessened injury to its value. An object to be avoided is the black mark which the cylinder sometimes receives from the charring of the wooden "chevalet," on which, while hot, it rested in the glass-house. If the diamond passes, inside the cylinder, over the space occupied by this mark upon the outside, the cylinder will fly to pieces. The reason of this is not difficult to understand. The chevalet prevented, by its non-conducting tendency, that portion of the glass with which it was in contact, from cooling equably with the rest, and the particles at that point remained in a state of tension. A careful blower will never place any large defect in his cylinder in contact with the chevalet, being aware of the probable result.

The use of the diamond in dividing plain surfaces of glass dates from the sixteenth century; but its application to the splitting of cylinders which had not undergone the process of annealing, was introduced not more than twenty years ago by M. Claudet. Previously, all such cylinders were split by a red-hot iron, and, even now, all cylinders of flashed glass, that is, of ordinary sheet glass covered inside with a skin of coloured, are still split in the same fashion.

On the continent, I believe, the diamond is gradually replacing the use of red-hot iron, though the latter is still the method more generally practised.

The cylinder is now ready for the flattener, who, having prepared it by a preliminary warming in the flue, by which it is introduced into his furnace, passes it, by means of a croppie, or iron instrument, on to the flattening stone, from the slight irregularities of whose surface it is protected by a lagre, or sheet of glass, laid upon the stone. Upon this lagre the cylinder, lying with the split uppermost, is soon opened by the flame passing over it, and falls back into a wavy sheet. The flattener now applies another instrument, a polissoir, or rod of iron, furnished at the end with a block of wood, and rubs down the waviness into a flat surface, often, upon a refractory piece, using considerable force. Some cylinders are so distorted in the blowing that no rubbing can flatten them; but all, good, bad, and indifferent, pass through the same treatment. The flattening stone is now moved on wheels to a cooler portion of the furnace, and by the aid of the flattening-fork, delivers its sheet to another stone, called the cooling stone. From this, when sufficiently stiff, it is again lifted, and then piled generally on its edge, in order to be annealed.

Very different, both in process and result, was the manufacture of spread, or German cylinder glass, which preceded the introduction into England of the French system. The cylinder, unskilfully blown, was cut open while hot with a pair of shears, and spread out immediately upon a plate of iron, covered with sand. The thickness of this glass was very irregular, and its surface very coarse.*

* To be continued.

* The following is a continuation of Mr. Chance's paper, read at the Society of Arts. See p. 139, *ante*.

DIOCESAN TRADE SCHOOL IN BRISTOL.

LORD GRANVILLE ON EDUCATION.

THE old Diocesan School at Bristol has been transformed into a trade school, and Lord Granville, as Lord President of the Council, presided at a meeting to inaugurate it on Friday, the 28th ult. The building has been remodelled. It formerly consisted of two large rooms—upper and lower. These are now partitioned off on the ground-floor—first, into a lecture-room; secondly, into the laboratory referred to, which is furnished and fitted on a plan supplied by Dr. Lyon Playfair; thirdly, an apartment for the lecturer's experiments; fourthly, a lavatory, &c. for the scholars. On the upper story are two large class-rooms, heated and ventilated, and a museum.

At the close of the proceedings, in reply to a vote of thanks, Lord Granville made an excellent address, clear, sensible, and persuasive. In the course of it, the speaker said,—It was certainly a most marvellous thing that the people of this country, while running the race of competition with other nations, should refuse to themselves such an element of success in commercial progress as that of education. What would be said of a strong man who, having to engage with a powerful adversary, should bind up one arm? With respect to the sort of education it was proposed to give, they ought to take great care, and not be the advocates of the theorist against the practical man. That which ought to be done was to give the practical man the advantage which he could obtain by learning something of the principles of the calling in which he was engaged. The ordinary effect of this would be, that they would establish a race of artisans—men who would be better artisans, men who would not only understand their work better, but would be more able to deal with new processes. They would establish a race of artisans who would derive pleasure and gratification from their employments, instead of that deadly weariness illustrated in the case of the man who put an end to his existence in consequence of not being able to work in mere routine. He believed that by these means they would raise the artisan both in his own self-respect and in the respect of his employers, and of all with whom he came in contact. He believed that an inventive genius was to be found in every class of society, and they would give that inventive genius enormous advantages if they trained the mind to learn those principles on which the labour of the artisan was founded. He could illustrate this by means of the steam-engine. Look at the position of one workmen learning that the steam-engine was a mere part of a machine, and compare him with the workman who understood the chemical part of the steam, understood the working of the cold and heat, and who from this knowledge was able to derive gratification and delight. If this argument had force formerly, how strong it must be now that the steam-engine had penetrated every nook and corner of the land. With respect to the school which they had that day met to inaugurate, he rejoiced to find that the boys were there instructed in the ordinary branches of a sound English education. He hoped that in this school special care would be taken to teach the English language—a subject which was too much neglected in every school of every class in this country. He believed there was no advantage which could be given to a man greater than to learn to speak and write his own language grammatically. With respect to the mining school, he (Lord Granville), from being an ironmaster and a colliery-owner, could not but rejoice that this was established in connection with the institution now inaugurated. As an instance of the value of scientific knowledge, he would mention that his colleague the Duke of Argyll had, from his peculiar education, mastered in a great degree all the physical sciences; and, being a Scotchman, he possessed those characteristics described by Mr. Commissioner Hill, and was not likely to let his habits of practical observation be entirely thrown away. Some time since his noble friend was looking at a quantity of refuse thrown away in the working of some metals, and was struck with its appearance. He sent it to a provincial metallurgist, and was told that there was nothing remarkable in it. Not satisfied with that, the Duke of Argyll sent it to the Museum of Practical Geology in London, when it was found that there was 11 per cent. of nickel, a valuable metal, and that every ton of this refuse was worth from 50*l.* to 60*l.* This was an instance of the value of a knowledge of science, and proved that such knowledge was not sufficiently spread all over the country at the present day.

PAYMENT TO ARCHITECTS FOR TAKING OUT QUANTITIES.

WIGAN WORKHOUSE.

THERE has been a little misunderstanding between the Wigan Board of Guardians and the architect of the proposed new workhouse, Mr. Mangnall, now, however, set right. The Board learnt that Mr. Fairclough, the successful competitor for the works, was to pay the architect 1½ per cent. for taking out the quantities, and that this was included in the amount of his tender, and therefore, of course, coming out of the pockets of the parish, the architect having also received 32 guineas for furnishing bills of quantities to the different competitors; and they considered that as the agreement with Mr. Mangnall that the 5 per cent. he was to receive for his services as architect was to include all travelling and other expenses, it should also include this charge for taking out the quantities. The builder told the Board that if the architect had not taken out the quantities, some other party must have done so, and that the expense would have been charged in the estimate. Mr. Mangnall, in explanation, reminded the Board, that when the appointment was made, he was asked the question, and said that the 5 per cent. would include all services rendered by him as architect; but he also stated that he was in the habit of taking out the quantities, and would do so if the committee wished it. He then informed the committee on what terms those quantities would be furnished, and also explained to them that the successful builder would have to pay for them 1½ per cent. The building committee distinctly understood that, and agreed to it. To show that it was a customary thing, he stated that at Leigh, 1¾ per cent. was paid by the builder; at Barton, 1¾ per cent. was paid by the builder; at Warrington, 1¼ per cent. was paid by the builder; at Oldham, 1½ per cent. was paid by the guardians; at Runcorn, 1¼ per cent. was paid by the contractor; at Ashton, 1½ per cent. was paid by the guardians; at Manchester, 1 per cent. was paid by the builder; at Chorlton-upon-Medlock, 1½ per cent. was paid by the builder.

The Chairman said he thought it amounted to the same thing, whether the architect did the work and was paid for it, or whether it was done by another surveyor.

After some discussion, the Board came to a resolution that the explanation was satisfactory.

There were 114 candidates for the office of clerk of the works, and the Board elected Mr. Hugh Hughes.

METROPOLITAN BOARD OF WORKS.

WIDTH OF NEW STREETS, ETC.—BUILDING OVER FORECOURTS.

AT a meeting of the Board of Works on the 28th of March, the following bye-laws, made by the Metropolitan Board of Works, at a meeting of the Board, held at the Guildhall, in the city of London, on the 29th of February, 1856, were read, approved of, and ordered:—

"Every new street within the limits of the metropolis, as defined by the said Act (excepting every mews), must be of the width of 40 feet at least; but if the buildings fronting any street be more than 40 feet high from the level of the street, then such street must be of a width equal at least to the height of the buildings above such level.

Every alley and every mews within the limits aforesaid, must be of the width of 20 feet at the least; but if the buildings fronting any alley, or to any mews, be more than 20 feet high from the level of the alley or mews, then such alley or mews must be of a width equal at least to the height of the buildings above such level. And with regard to every such alley, in reference to the entrance thereof, every alley must have two entrances thereto, each being at the least the full width of the alley, and one of the two at the least open from the ground upwards.

And with regard to both such streets and alleys, the aforesaid width is to be ascertained by measuring (at right angles to the course thereof) from front to front of the buildings, on each side of such street or alley.

The word 'streets' to include every square, circus, crescent, street, road, place, row, mews, lane, or place along which carriages can pass, or are intended to pass, and that whether there be or not, in addition to the carriage-way, a footway paved or otherwise.

The word 'alley' to include any court, alley, passage, or other public place, which can be used as a footway only.

In case of any breach of the regulations contained in this bye-law, the offender shall be liable for each offence to a penalty of 40s. and, in case of a continuing offence, the further penalty of 20s. for each day after notice thereof from the Metropolitan Board of Works."

This bye-law has been sanctioned by the Home Secretary, Sir George Grey, and therefore now has all the force of law.

Some applications for permission to erect a building over the forecourt of premises were *refused*.

The memorial from Southwark, respecting street improvements there, together with the report of the Finance Committee in relation thereto, was referred to the Committee of Works and Improvements.

Mr. D'Iffanger gave notice of the following motion:—"That in order to ascertain how far it may be desirable to carry out that portion of sec. 141, which empowers the Board, 'where more than one street in the metropolis is called by the same name, to alter the name of any and all such streets except one,' a letter be addressed to all the vestries and district boards, requesting them to furnish this Board with an alphabetical list of all their streets, &c. and that the consideration of the subject be referred to the committee appointed to confer with vestries and district boards."

PROJECTION CASES IN THE METROPOLIS.

THE subject of projections from the street fronts of buildings is one of considerable difficulty under the regulations of the Building Act. I think that the *primâ facie* conclusion to be arrived at is the reverse of that of your correspondent "Tempora Mutantur." The Act provides, sect. 26, clause 5, that "Except in so far as is permitted by this section, in the case of shop-fronts, and with the exception of ..... architectural decorations, no projection shall extend beyond the general line of fronts in any street, except with the permission of the Metropolitan Board of Works." It seems clear, therefore, that without the *special* permission of the Board, projections are *inadmissible:* a strict construction of the Act seems even to prohibit ordinary porticoes, unless they may be considered to come under the denomination of "architectural decorations."

The question as to the power of rebuilding existing projections, particularly in cases of shop-fronts projecting more than 10 inches, is one on which I am aware that there is a difference of opinion. It is very desirable that the whole subject should be well considered and definitely settled, so that the building public may know what they may and may not do.

DISTRICT SURVEYOR.

METROPOLITAN BOARD OF WORKS, AND BUILDERS' SHOP-FRONTS.

IT is of some importance to householders to consider how far they may be affected prejudicially, or otherwise, by the meaning that may be attached to clause 143, of the Metropolis Local Management Act, giving vestries power to remove projections.

This clause says no "building" shall, without consent, &c. &c. &c. be erected beyond the regular line of the buildings in the street. Clause 119, prevents any actual obstruction being projected on roadways or footpaths.

Is a small addition of 3, 4, or 5 feet to the front of a shop, on its own ground, to be deemed a building within the meaning of this clause,—and as such amenable to its control? How is the regular line of the fronts in an irregular line of street to be determined, some setting back, others breaking forward?

Again, is the filling up of an unoccupied space between fronts already brought out, to be deemed the

erection of buildings,—and are these to be considered as projections extending beyond the regular line of the fronts?

These points are of great importance; and it is highly desirable that the fullest considerations should be given to them, to prevent any undue hardship without countervailing advantages being gained. In London, streets are so irregularly plotted out, and have been so added to and altered, that it would puzzle the whole bench at Westminster to determine what, in the words of the Act, is the "regular line of the buildings in the street." A Householder.

Party Fence or Garden Walls are not regulated by the Metropolitan Building Act, or subject to the supervision of the district surveyor, as was the case under the late Act. There is no restriction as to height or mode of construction, and a man in the New-road pleads that he is only building garden or party fence walls, and that he may build them as high as the houses. The Act is most defective.

A Bewildered One.

INSTITUTION OF CIVIL ENGINEERS.

On the 11th inst. Mr. Robert Stephenson, M.P. in the chair, the discussion was renewed on the paper, "On the Explosions of Steam Boilers," by Mr. William Kemble Hall, and was continued throughout the evening.

A new form of boiler was exhibited, and described as having been recently erected at the works of Messrs. Humphrys, Tennant, and Dykes. The fire-box, of 3 feet diameter, was composed of a series of flanged rings of Low Moor iron, fastened together in such a manner as that the rivets should be surrounded by water, and not be exposed to the action of the fire. The depth of water over the fire-box would be double that over the small iron flues, or tubes, which were 3 inches in diameter. No double thickness of plate was allowed anywhere. It was intended to supply steam of 70 lbs. per inch, and it had been loaded up to 120 lbs. per inch. The shell was much stronger than that of one of the Great Western locomotives; and it was anticipated that the steam might be permitted to accumulate without danger.

When it was remembered that the explosion of a boiler, under a pressure of 140 lbs. per square inch, was nearly identical with that of a 10-inch gun, the effects of such an occurrence were not surprising.

It was reiterated that it was not necessary to have recourse to the spheroidal theory,—to the decomposition of water,—or to any highly scientific arguments, and much less to mysterious or occult causes, for the reasons of explosions. Careful investigation would in general point sufficiently clearly to them, when the reasons were fairly sought for.

It was stated that the observed cases of corrosion of the plates of boilers might be referred to galvanic agency, and instances were given of such effects being produced, when the bilge water was taken up by the feed-pumps and injected into the boilers.

The decomposition of water on heated plates, although admitted to be an interesting chemical study, was now generally rejected, as a practical solution of the question of explosion; and as to the spheroidal theory, any such pressure of steam as must exist within a boiler would practically force the water into absolute contact with the heated surface, and would not permit the globules to be suspended amidst the film of steam, at atmospheric pressure, as in an open crucible, or on a plain heated plate. Therefore that theory must almost be abandoned in practice.

The causes of explosions might, at first sight, appear to be difficult of discovery, but careful investigation generally brought to light evidence of some condition of the boiler under which an accident would be inevitable.

On the 18th, Mr. I. K. Brunel in the chair, the paper read was, "On Improvements in Diving Dresses, and other Apparatus for Working under Water," by Mr. William Heinke.

In tracing the history of diving apparatus and submarine researches, mention was made of one undertaken by one Phipps, a ship carpenter, the son of a blacksmith, at Boston, in America. He devised some modification of the apparatus, which enabled him to operate, in 1687, upon the wreck of a Spanish galleon, lying off the coast of Hispaniola; and, on being assisted with money by the Earl of Albemarle, eventually succeeded in raising property of the value of 300,000*l.* of which his own share amounted to about 20,000*l.* He then continued to engage in similar ventures, so successfully, that he was knighted,—became sheriff of New England,—and founded the noble family now represented by the Marquis of Normanby!

In 1779, Smeaton first used diving-bells for civil engineering operations; and one of his apparatus was stated to be still in existence at Ramsgate harbour. Rennie employed them very extensively, and introduced great modifications in their construction, having them made of cast-iron, with lenses in the top, and using powerful air-pumps. Very extensive submarine works were thus constructed, and difficult repairs were made. Telford also used the diving-bell somewhat extensively; and, up to the present day, Sir John Rennie, at Plymouth, and Mr. Walker, at Alderney and Dover, and other places, had, in common with almost all the other marine civil engineers, employed the diving-bell for their works. Indeed, the contractors for such works now found them so useful, and the men managed them so skilfully, that works heretofore considered almost impracticable were undertaken without hesitation.

SANITARY IMPROVEMENTS IN CHELSEA.

The new Board and their officers appear to be working vigorously with the view of effecting sanitary improvements. Landlords are being called on to fill up cesspools, provide conveniences, to lessen the overcrowding, &c. &c. An extract from a recent report of the Medical Officer of Health, Dr. A. Whyte Barclay, will serve to show the condition of one part of the parish:—"Since your last meeting," he says, "one of the worst districts of the parish has been carefully inspected. It consists of a square of ground, bounded by Turk's-row, Franklin's-row, Queen's-road East, and White Lion-street, nearly every portion of which is covered by miserable houses, ranged in courts and yards, in the closest possible contact; and though most of the houses appear to be of comparatively recent date, they are generally of the worst construction, and in very bad repair. I trust the day is not far distant when the whole of these crowded courts and lanes will be demolished, but in the meantime it is imperative on me to ameliorate, so far as possible, with your assistance, the condition of the inhabitants, and especially in the first instance, to call your attention to such matter as require time for their completion.

I consider that, in many instances, the houses are over crowded, and that if any epidemic should appear in the parish, it would be necessary to take immediate steps for reducing the number of the inhabitants. In the meantime I would recommend notice to be served on the landlords, that over-crowding will not be permitted, specifying only the more glaring examples. In illustration I may cite to you two instances in Bolton's-gardens, in houses consisting of two rooms placed one over the other; that on the ground-floor, measuring about 12 feet by 7 feet and 8 feet in height, the upstairs room having the same dimensions, but being very little over 6 feet in height, which may be roughly estimated at 700 and 550 cubic feet respectively, together 1,250 cubic feet, which is no more than is allowed to one bed in the best ventilated wards of our metropolitan hospitals, and yet these two houses are occupied, the one by eleven, and the other actually by fifteen persons."

The return of mortality made with the report in question (for two weeks ending March 15), is very favourable. The deaths are twenty below those of last year, and eleven below the average of ten years, viz.:—

Deaths in two weeks mentioned	46
Deaths in corresponding weeks of 1855	66
Average mortality in corresponding weeks of ten years	57·1

This is very encouraging, with all allowance for the admitted healthiness of the present year.

CHURCH-BUILDING NEWS.

Rochester.—A new congregational chapel is about to be erected on the piece of vacant land at the top of Star-hill, Rochester, Kent, the foundation-stone of which was to be laid last week. The proposed site is in the centre of a dense population, far removed from the nearest place of worship. The following were the tenders for the erection of the chapel:—

Robins	£568	0	0
Spicer	554	10	0
Naylar	532	0	0
Cotton	529	16	0
Collins	517	0	0
Jennings (accepted)	512	14	0

Marton.—The new church of St. Mark, Marton, was opened on Thursday in last week, when the edifice was consecrated. The first stone of the new edifice was laid about St. Mark's day, in last year. Mr. E. Haycock, jun. of Shrewsbury, was the architect; and Mr. Henry Thomas, of same place, undertook the building, his contract being 650*l.* The church is situated above the Montgomery-road, and forms a conspicuous object for many miles. It consists of a nave, chancel, vestry, and porch, the latter of timber. There is also a turret and spire at the west end of the nave. The interior is fitted up with open moveable seats, which will accommodate 120 adults. The roofs are open-timbered, and, like the rest of the internal woodwork, stained a light colour. Stone from the neighbourhood has been used for the walling, but the dressings are of Grinshill freestone.

Brackenfield.—The chief stone of a new church, to be dedicated to the Trinity, was laid at Brackenfield, Derbyshire, on Monday in last week, by Mrs. Turbutt, wife of Mr. Gladwin Turbutt, of Ogston Hall, adjacent, who presented the site and a subscription of 600*l.* The church about to be erected will be in the Early Decorated style of architecture, and is estimated to cost 1,300*l.*

Whitkirk.—St. Mary's Church, Whitkirk, near Leeds, the interior of which has recently been renovated and improved, was re-opened on Thursday before last. The old lofty pews have been removed, and new deal seats, with tracery bench ends, and low doors, substituted. The pulpit is executed in Caen stone, lined with oak, and is octagonal in plan. The flat plaster ceilings have been taken down, and the old oak roof of the nave, with its moulded longitudinal and transverse ribs, exposed to view, new carved bosses being fixed at the intersections. New roofs have been placed over the chancel and aisles, corresponding in character. The piers and arches have been stripped of thick coats of whitewash, and the stone partly restored to its former colour and sharpness of mouldings and arrisses. The east wall of the chancel, the Ingram chapel, and the vestry have been rebuilt, and windows with rich tracery heads introduced, and a porch to the Ingram chapel provided contiguous to the east end. The west organ gallery has been removed, the organ being now placed in the tower, level with the church floor, and a carved tracery screen erected in front of the tower arch. Carved tracery oak screens have been erected round the Ingram and Waud mortuary chapels. Several of the windows are filled with stained glass. The east window, given by Major Waud, of Manston Hall, represents the Ascension, &c.: the east window of the south aisle, next the Ingram chapel, and the end window in north aisle, are memorial ones presented by Mr. Atkinson and Mr. A. Horsfall. The windows are by Messrs. M. and A. O'Connor. The two windows in the north aisle, given by Mrs. Ingram, of Templenewsam, and the whole of the clerestory window, were filled with stained glass by Mr. Lavers, of London. The chancel roof and east wall have been erected at the expense of the Masters and Fellows of Trinity College, who have also contributed towards the general restoration fund; and the vestry roof and wall, and the east wall and entrance porch to the Ingram chapel, by Admiral Meynell. The repairs and alterations have been carried out under the superintendence and from the designs of Mr. J. Dobson, of Leeds, architect.

Middlesborough.—The foundation-stone of a new Independent chapel was laid here on

Tuesday in last week. The building will cost, when completed, upwards of 2,000*l.* nearly all of which sum (including the sale of the old chapel) is provided for. It will be erected from plans by Mr. Oliver, of Sunderland, the proposed dimensions being 60 feet by 40 feet. The site is immediately opposite Queen's-terrace, near the railway station. The chapel will be built in the plain Italian style of architecture, and will contain seat accommodation for 700 persons.

Edinburgh.—A new church is to be erected at George IV.'s bridge, on the east side next to Merchant-street.

Lochlee.—A meeting of the committee of the congregation of the Free Church, says the *Montrose Review*, met with the Presbytery committee in Brechin, on Tuesday week, to receive estimates for the erection of their new church and manse, according to plans prepared by Messrs. Hay, of Liverpool. The following tenders were accepted:—Mr. Dinnie, Aboyne, for the mason work; Mr. Wm. Black, Brechin, for the carpenter work; Mr. Mackie, Brechin, for the plaster work; and a person from Montrose for the slater work. It was found, on examining the estimates for the manse, plans of which had been prepared by Mr. Greig, of Montrose, that they exceeded the amount the congregation were willing to engage for, and it was agreed to have the plans remodelled.

SCHOOL-BUILDING.

Seacombe (*Liverpool*).—The foundation-stone of new Wesleyan schools at Seacombe was laid on Tuesday before last, by Mr. John Farnworth. The site is on a piece of land at the left side of Brighton-street, midway between Seacombe and Egremont, on which it is said the Wesleyans also contemplate erecting a chapel at some future period. The buildings are to be in the Old English style of architecture, and capable of accommodating about 250 scholars—boys, girls, and infants—and to include a house for a resident master. The architects are Messrs. Hay, of Liverpool; the builder, Mr. H. Fisher, of Birkenhead. The estimated cost is 1,900*l.* towards which Government will grant 735*l.*

Peterborough.—The proposed schools are in a progressive state, and it is expected the foundation-stone of the practising school, which is to serve as the parochial school for the St. Mary's district, will shortly be laid in Touthill-close. The entire plan embraces also a training and a reformatory school; and as Government allows 7*s.* per week for each young culprit, it is supposed the latter will be self-supporting.

Worcester.—The new school-rooms built for St. Nicholas, at the expense of Mr. J. W. Lea, are now nearly completed. The buildings are situated in the Infirmary-walk, where they form a prominent object. There are two large school-rooms, one for boys and the other for girls; and the number that can be accommodated is about eighty of each. The school-rooms are divided from each other by four painted arches and a wood skirting, and are lighted by triplet windows, with stone moulded mullions. Apartments are appropriated for the accommodation of a schoolmistress, and the other arrangements and offices are complete. There are separate entrances for the boys and girls: their playgrounds are also divided. The architect is Mr. Elmslie, of Malvern; the builder and contractor, Mr. Perkins: the masonry is executed by Mr. Warmington. The premises are bounded by a low wall and palisading.

Cheltenham.—New parochial schools are in progress of erection here. The site was formerly occupied by the old parish workhouse. The building, which has been commenced, will be erected under the direction of Mr. D. J. Humphris, the architect. The plans were approved by the Committee of Council, and a grant of 1,030*l.* allowed towards the cost of erection. The building will contain on the ground-floor an infants' school-room, 50 feet by 30 feet, and 15 feet 6 inches high; a class-room, 25 feet by 15 feet; cloak-room, lobby, &c.; and on the upper floor a school-room for girls, 50 feet by 30 feet, with class-room, cloak-room, lobby, &c. of the same size as those below. In connection with the school is a convenient teacher's residence. The building will be erected in brickwork, with freestone window dressings, chimneys, &c. of suitable character, but very plain. The contract is entered into with Mr. Hunt, of this town, builder, at the sum of 1,715*l.*; his tender being the lowest of the three from builders who were invited to estimate for the work. The total outlay will exceed 2,000*l.* including the land.——The directors of the Cheltenham College have granted their Institution for the sectional and other meetings of the British Association, in August; that building being extensive and well adapted for for the purpose.

STAINED-GLASS WINDOWS.

Culworth Church.—The inhabitants of Culworth, in respect to the memory of the late Rev. J. Spence, as their rector, have agreed to erect a memorial window in the chancel of Culworth church, and a tablet in the school which he built, and for which he left 1,000*l.* as an endowment. A committee has been appointed to receive contributions.

Holy Trinity Church, Coventry.—The east window of Holy Trinity Church, Coventry, in memory of the late Mr. R. S. Cox, has just been erected. It is by Messrs. Heaton and Butler, of London. The lowest row of figures represent—Elijah and the widow woman; Moses smiting the rock; Abraham entertaining three angels; Job comforted; Elisha raising the son of the Shunamite; and Joseph and the Butler and Baker. The figures above represent our Lord and the six works of mercy: "I was an hungered and ye gave me meat," &c. The small figures represent Abraham, Moses, Jacob, Noah, Joshua, Daniel, Joseph, and David. In the centre is an angel holding the symbol of the Trinity. Above are the sacred monograms, "I.H.C."—"I.H.S.;" the symbols of the Holy Spirit and the Christian Faith; and the Palm and Crown of Martyrdom. On a marble tablet will be the inscription. Both St. Michael's and Holy Trinity, Coventry, are now, pretty well adorned with stained-glass windows.

St. Peter's, Rock Ferry (*Liverpool*).—Two memorial stained-glass windows have just been placed in this church. The east, or altar window, is a triplet of the Early English period. Groups fill the centres of each compartment, comprising the following subjects,—The Birth, the Lord's Supper, and the Crucifixion. The designers and artists were Messrs. Forrest and Bromley, of Liverpool. The inscription for the east window is placed on a brass plate, engraved by Mr. Leatherbarrow, adjoining the window.

Glasgow Cathedral.—The Lord Provost of Glasgow is succeeding to his wish, it seems, in getting public-spirited families to undertake the responsibility of each filling in a window of the cathedral with stained glass. There is now no doubt that the whole forty-four windows of the cathedral will be appropriated, and that contributors will be glad to have the opportunity afforded them of decorating their revivified cathedral.

St. Mary's, Whitkirk (*Leeds*).—In connection with other improvements, several stained-glass windows have recently been put up in this edifice: for particulars as to these, we must refer to "Church-building News."

Holy Trinity, Colchester.—Mr. Warrington draws our attention to the circumstance, that a stained-glass window, by him lately put up in Holy Trinity Church, Colchester, was inadvertently noticed by us, on 8th ult. under the head of Chelmsford. The window is intended as a monument to the late Miss Corsellis.

PROVINCIAL NEWS.

Chelmsford.—The site of the new corn exchange has been cleared of old buildings. The plans, for which contracts are now, according to the local *Chronicle*, about to be entered upon, are for a building in the Lombardic style, with a somewhat more Palladian cast than that generally adopted. The entrance from the square will be through three arches into a hall, from which three openings, with glazed swing doors, will give access to the exchange. This is to be 100 feet long, by 45 feet wide, and afford accommodation for 100 stands, with twenty-five counting-houses. The separating walls of these will form the main stay of the building, and serve to support seven pairs of perforated arched iron ribs, the apex of which will be 40 feet from the floor of the exchange, and to which will be attached the whole roof with its covering of glass. A ventilating chamber running along the ridge of the roof with ornamental panelled gratings in the ceiling, and smaller gratings in the side walls, are to be the means provided for ventilation, which can be increased or diminished at pleasure. The end of the building is curved for a platform, and near at hand is provided a lecturer's room and other conveniences. At the entrance end will be a gallery opening into the market, forming a kind of mezzanine floor to the front building. A large room, applicable for auctions and meetings, and upwards of 40 feet by 20 feet, occupies the first floor of the front building, and faces the square, into which projects a stone balcony. It is proposed to face the front building with stone to the height of the first floor, with yellow stocks and stone dressings above, the whole crowned with a stone cornice and balustrade.

Brentwood.—A proof of the increased value of land in the vicinity of Brentwood was given lately, when a few acres on the Ongar side of the town, submitted to auction, realised the unlooked-for price of 100*l.* per acre. The favourite building ground has been on the opposite side: on the Warley declivities, land, it is said, has frequently exceeded 80*l.* and even 100*l.* an acre. After a somewhat spirited competition, thirteen acres of land which, a few years ago, were disposed of for 900*l.* were knocked down for 1,240*l.*

Banbury.—The foundations of a wood-turning establishment have just been laid in Banbury. The site is close to the canal, and adjoining the baths. The design of the building and machinery is by Mr. J. W. Wilson, of Neithrop, who is superintending the erection. Mr. A. Kimberley, of this town, is the contractor. The building will be in one story, 70 feet long, and 30 feet wide, and the walls will be 12 feet high: the chimney-shaft will be about 50 feet high; and the walls are said to be of sufficient strength to permit of another story being added when required. With the same view, the roof, which is Queen-trussed, with skylights, has been designed so that it can be lifted off in one piece; and the front and back walls will be left toothed, so that the building may be also extended in length if necessary. The steam-engine is of 14-horse power.

Weymouth.—The directors of the new Weymouth Water Company have let the works about to be erected by contract to Mr. Leather, the contractor of the Portland Breakwater, who, it is calculated, with the large staff of workmen which he has at his command, will complete them so as to supply Melcombe Regis in about three months, and the whole of the borough before the ensuing autumn.

Wolverhampton.—The brass-cock founders lately in the employ of Messrs. Ready and Meynell, of Bilston-street, Wolverhampton, have left their work, in consequence of the introduction of machinery into the manufactory.——The town surveyor, Mr. Henry, has completed his report on the sewerage of this town. The surveyor proposes to construct the sewers sufficiently large to carry off the ordinary rain-water, which will assist in diluting the sewerage and scouring the sewers. The position of the town, on the ridge dividing the basins of the Severn and Trent rivers, affords three out falls, two of which may be ultimately combined. Sewerages immediately will be necessary for 1,150 acres, which will require 14,541 yards of main sewers, estimated to cost 15,549*l.* 13*s.* 8*d.*; 13,336 yards of branch sewers, at a cost of 7,865*l.* 10*s.* 8*d.*; and 52,265 yards of minor sewers, estimated at 19,803*l.* 17*s.* 6*d.* This gives a total of upwards of forty-five miles of sewers. Adding various other expenses, including compensation, land, &c. the total cost is set down at 50,951*l.* 1*s.* 10*d.* Mr. Henry recommended that 10,000*l.* should be expended annually, the money to be borrowed and repaid with the interest in equal annual instalments in thirty years.

Liverpool.—A large block of offices is about to be erected in Old Hall-street, Liverpool, to occupy the vacant space of ground between

George-street and Ormond-street. The principal front in Old Hall-street will consist of a granite basement, supporting the ground story of rusticated stonework, above which the principal story is to be arcaded and enriched with ornamented arch bands in stone, the arches being filled in with carved foliage and lunettes of red and green polished serpentine. Above the top story will be an enriched frieze, with lunettes of red and green serpentine at intervals, upon which will come a bold and effective stone cornice and balustrade. The plain portions of the upper stories will be of red brick. The principal entrance archway will have polished red granite jambs, and the entrance ceiling will be groined and panelled, and supported on detached columns, with polished red granite shafts. The offices will open into long corridors, 12 feet wide, which will be lighted from above by continuous skylights, the light being admitted through the stories by open well-holes. In the centre of the whole building will be an open court-yard, 170 feet by 35 feet, communicating with the front and side entrances, and having two small iron bridges for communication from one side of the building to the other. The frontage in Old Hall-street will be about 145 feet, and the depth of the building 230 feet. There will be between sixty and seventy complete sets of offices. The architect is Mr. James K. Colling, of London.——Eight years ago, according to the local *Journal*, the first portion of the Tower-buildings, Water-street, was erected by Sir Joseph Bailey, M.P. but circumstances occurred to prevent the completion of the whole stack according to the plans of Mr. Picton. The obstruction, however, having been removed, the architect will now proceed to carry out the original design, at a cost to Sir Joseph Bailey of about 20,000*l*. The buildings, which will be erected on the site of the yard occupied until lately by Bailey, Brothers, and Co. will face Water-street, and be named Tower-buildings South. They will contain about twenty suites of offices, and form, says the *Journal*, a handsome feature in the architectural adornments of the town. The style, we believe, will be of the Italian order,—something between the Roman and Venetian style. The brickwork is contracted for by Messrs. Jump and Son, and the masonry by Mr. H. Yates. The clerk of the works is Mr. T. Jones. On Saturday last the first stone of the buildings was laid.——The large floating landing-stage to be placed alongside Prince's-pier, for the accommodation of channel and sea-going steamers, is being rapidly proceeded with by Messrs. Vernon and Sons, the sub-contractors. When all is in readiness for the purpose, says the *Albion*, it is proposed to launch this vast fabric in four portions, which will be floated in succession to its place of destination at the Prince's-pier. The whole will be completed within twelve months; the period fixed by the contract. The stage, which is to be 1,000 feet long, will cost upwards of 140,000*l*. The principle of construction is the same as the landing-stage at George's-pier. The whole weight of the stage, mooring-chains, and bridges, is estimated at 4,500 tons, which, it is calculated, will displace about 160,000 cubic feet of water, while its actual draft of water will not exceed 3 feet.

Masham.—The laying of the foundation-stone of "The Riddell Memorial Mechanics' Institute," at Masham, took place week before last, Admiral Harcourt, of Swinton Park, officiating. The cost of the building is raised by a subscription entered into by the parishioners and friends of the late Rev. Thomas Riddell, M.A. vicar of the parish. The structure is after a design by Messrs. Perkin and Backhouse, of Leeds, architects. It is of the plain Italian style of architecture, and contains a vestibule and staircase, large reading-room, class-rooms, rooms for the librarian and hall-keeper, on the ground-floor; and a lecture-room, ante-room, committee-room, and bed-rooms, on the upper-floor.

Seaham-harbour.—It is said that Lady Londonderry has resolved upon enlarging the works at Seaham Harbour, at an outlay of 100,000*l*. The produce of the tracts of ironstone leased by her ladyship in the Cleveland district is to be brought to Seaham, where blast furnaces are to be erected.

Jedburgh.—Improved dwellings for the labouring classes in the rural districts are now springing up in various localities in this district. Two have recently been erected at Muirhouselaw, the property of Mr. J. Ord. Each cottage, according to the *Kelso Chronicle*, contains two apartments on the ground-floor, and attics above, besides other conveniences. Under the old system of constructing hinds' houses, the whole business of eating, sleeping, and cooking had to be carried on in one room, but the old-fashioned tumble-down cottages are fast disappearing.

St. Helier.—The thorough drainage of the town, says the *Jersey Times*, will very shortly be recommenced, when that portion of King-street from Charing-cross to New-street, and thence up that street to Val-plaisant, will be first undertaken; then Conway-street, Hope-street, Cross-street, and Bond-street. All these streets are thickly-inhabited thoroughfares. The streets already drained have greatly improved the sanitary condition, comfort, and cleanliness of St. Helier.

THE LATE MR. DAVID LAING, ARCHITECT, F.S.A.

We have this week to record the death of Mr. Laing, one of our veteran architects, at the very advanced age of eighty-two. This gentleman was one of the few architects who connected the present race with the past. He was the son of a merchant in the City, and was articled to Sir John Soane, about the time when, on Soane's return from Italy, he undertook the charge of the great works at the Bank.

At the beginning of this century, Mr. Laing published a small work, called "Hints for Dwellings." This book had a ready sale amongst those who began at that time to adorn the neighbourhood of London with those

> "Suburban villas, highway-side retreats,
> Which dread the encroachments of our growing streets."

About the year 1810 he received the appointment of "Surveyor of Buildings" at the Custom-house, and soon obtained directions to prepare designs for a new Custom-house, on a site west of the old work by Sir Christopher Wren, and between that building and Billingsgate. This edifice was just begun when the fire destroyed the old Custom-house; and about five years afterwards the new building was occupied, with much *éclat* at its opening. What this building then was is shown by the large work published by Taylor, of Holborn, which described its arrangement and construction. A few years after, alas! symptoms of decay showed themselves in the foundation of the building; and after much litigation and anxiety a new foundation was put in, and the whole building rearranged and much altered by Sir R. Smirke. Mr. Peto (the predecessor and uncle of the present baronet of the same name) was the contractor for this building; and the actions for penalties, and consequent vexations to which he was subject from the failure of this foundation, tended, we believe, to shorten his life.

The cause of the failure in question was much canvassed at the time, and it was attributed by many to the decay of the beech piling and planking used as the substratum of the foundation. If this were the cause, we believe neither the architect nor the contractor was really responsible, as that material was used on the recommendation of a very eminent engineer of the day, who was consulted by the Government on that subject, and it was used in spite of the protests of both of the parties who were made liable for the result.

Mr. Kelsey, the well-known surveyor of the Commissioners of Sewers of London; Mr. Lee, the brother of Mr. F. Lee, the painter, and one of the most promising architects of the day, long since dead; Mr. Fowler, Mr. Tite, and Mr. Bellamy, were all pupils of Mr. Laing, and have been happily more fortunate than their kind-hearted master. Mr. Tite laid the foundation of his reputation as joint architect with Mr. Laing of the Church of St. Dunstan-in-the-East, which was re-erected principally from the designs of the former gentleman.

Soon after the accident at the Custom-house, Mr. Laing retired from public life, and his latter days, we have reason to believe, were cheered by the kindness of his former pupils and the profession generally.

STEAM-WASHING ESTABLISHMENT, WELLINGTON BARRACKS.

A new building has been erected in the rear of the Wellington Barracks, St. James's-park, to do the barrack washing of the London district by steam power. The building contains a receiving-room for dirty linen, a washing-room, a drying-room, ironing, mangling, and folding room; clean linen room, engine-room, and boiler-house. The washing-room contains two of Macalpine's patent washing-machines, one dash or rinsing wheel, one hydro-extractor, &c. The process of washing is as follows:—The washing-machines are supplied with a certain quantity of cold water from a tap immediately above them: this water is boiled in about five minutes, by a jet of steam supplied by a pipe in the centre of the machine: the dirty linen is then placed in the machine, which is then started, and revolves horizontally beneath a number of beaters, which are kept moving up and down until the goods are cleansed. The time occupied by this process varies from ten to twenty minutes. The goods are then placed in the rinsing-wheel, and in five minutes are ready for the hydro-extractor, in which they are placed for three minutes; and from thence they are carried into the drying-room, which is heated by steam pipes placed immediately under an open floor. The goods, when dry, are taken to the folding and mangling room; the entire process occupying but a short period of time compared with the old systems of washing, besides the saving effected in soap and labour. The machines are driven by an 8-horse horizontal high-pressure engine, in connection with two steam boilers. The washing-machine, engine, boilers, &c. have been manufactured by Messrs. Manlove and Alliott, of Bloomsgrove Works, Nottingham. Messrs. Bennett and Holdsworth are the contractors for the buildings, under the superintendence of Mr. J. Niblett, of the Royal Engineers department. Ultimately the system here adopted will probably supersede other known processes of washing.

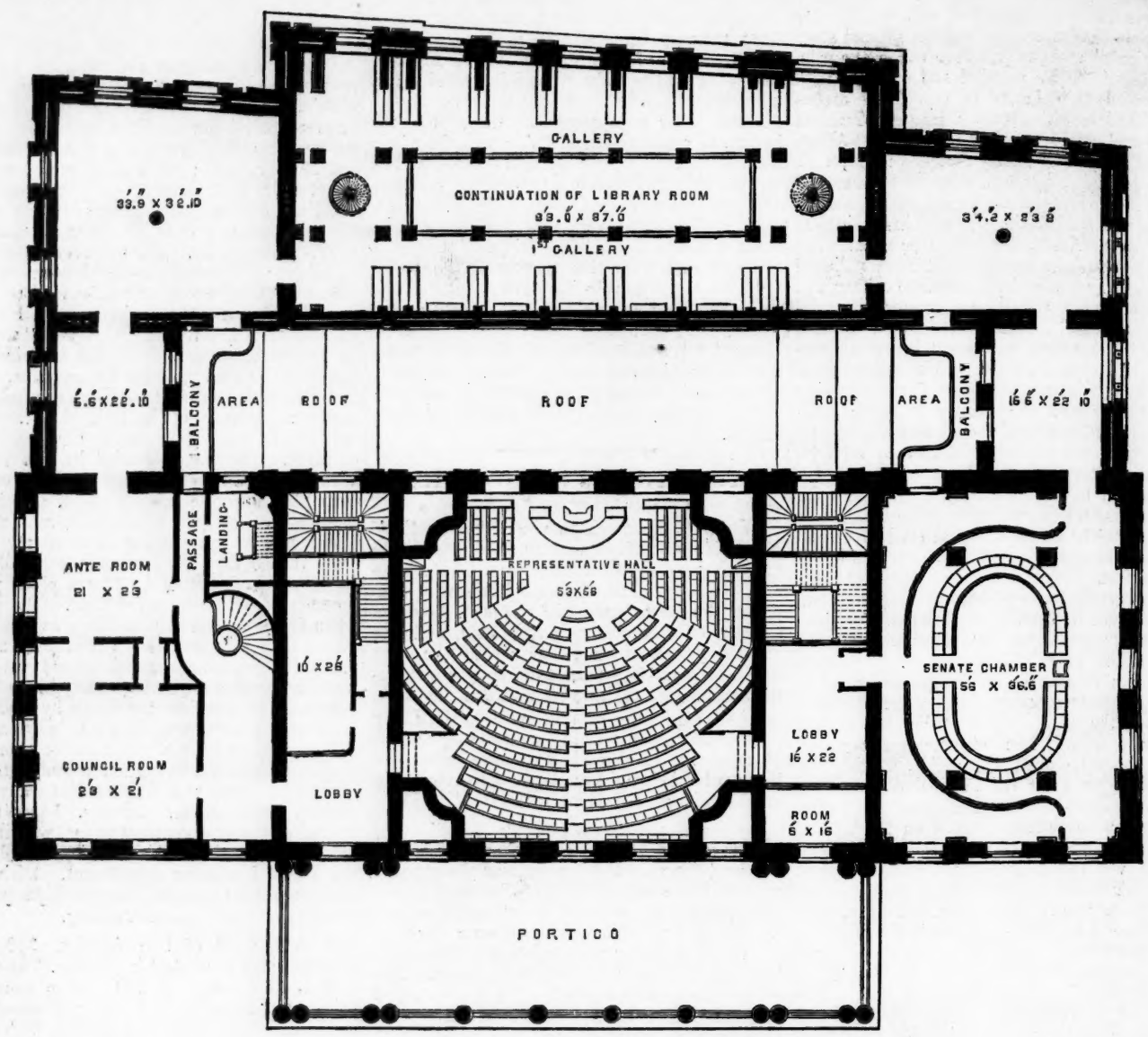
With the aid of two females, 900 large coverlets may be washed in the day. The drying is done at the rate of 200 in two hours. A prison for twenty-two men, and schools for children and adults, are being built, with other works, to afford accommodation for 1,500 men, instead of 900, as at present.

ARCHITECTS AND ENGINEERS' CLUB.

It is manifest that at present students of architecture, engineering, and painting come but seldom into contact with each other. And it appears to me to be at least very desirable that in these, as in the other professions, mind should meet mind. I would suggest, then, an Architects and Engineers' Club, in which the resemblance to the clubs of Pall-mall, &c. should be carried so far as to admit of the members dining there habitually. Those who can afford to dine at the Wellington, dine certainly as gentlemen should—but few are rich enough to do this. A student myself, I have tried very many of the *restaurants* in London, and I can fairly say of them that there is barely one that is respectable: low, hot, crowded rooms, inferior cookery, and dirty dinner-services, render one's dinner a disagreeable necessity rather than a sociable repast. Now all this might be easily obviated. By adopting the plan of the *table-d'hôte* or military mess, a commencement might be made. If any *restaurateur* would engage to find a good spacious room, good plate, &c. at a moderate charge, I am certain he would never find his table deserted. Thirty or forty students agreeing to dine regularly at his establishment would well indemnify him for his trouble. Of course, all such schemes as these can have but small beginnings. When the plan of a regular *table-d'hôte* was once fairly started, a club could be formed, each member paying a small annual subscription, which would enable the club to hire one or two rooms, adjoining the dining-room, with an architectural library, and the various professional periodicals regularly supplied.

Of course, I have here merely traced a rough outline, which I leave to be filled up when the plan itself has found sufficient favour to ensure its realization. I could say much more to prove the advantages of such a plan—but space fails. I hope that, if this letter should be so fortunate as to find a place in your columns, it may meet the eyes of some who, possessing the means, may also have the will to start the project.

H. B.



PLAN OF UPPER STORY, STATE-HOUSE, MASSACHUSETTS.

THE STATE HOUSE OF MASSACHUSETTS, U.S.

THE State House of Massachusetts, in the city of Boston, the capital, has been recently very much enlarged and altered; and that it may be seen what our Trans-Atlantic brethren are doing in the way of architecture, we give a view of the building, and a plan of the upper floor, containing the Hall of Representatives, 53 feet by 56 feet, the Senate Chamber, 56 feet by 36 feet 6 inches, and the upper part of the Library, 88 feet long, and about 37 feet wide. Under the Hall of Representatives is what is called the "Doric-hall," which is divided longitudinally by two ranges of columns, and extends beneath the part marked "Roof" on our plan, and is terminated with a statue in a niche. The enlargement consists of a central building and two wings, shown in the view. The cupola is part of the old house. It is for the most part a brick building, with a granite basement.

The flooring of the first, second, and third stories of the enlargement is constructed with brick groined arches, supported upon piers projecting from the inside faces of the exterior walls, and upon interior piers and columns, arranged in the several stories. The remainder of the floorings, viz. those of the fourth stories of the wings, are to be constructed with segmental arches of brick, supported by cast-iron beams, spanning the widths of the wings. The two galleries of the library are of cast and wrought iron. All the roofs are of wrought-iron, covered with sheet copper. The staircases are also of iron. The supporting columns of the groined arches in the first, or basement, and in the second stories, are of cast-iron. All the interior columns of the library are also of cast-iron. All the exterior windows, dressings, and their balconies, including the window pedestals and architraves on the outside of the exterior walls, as also the string courses and cornices, mouldings, and balustrades around the roofs, are of cast-iron. The pilasters, with their capitals and bases, of the Corinthian order of the exterior walls facing Mount Vernon-street, are all of cast-iron.

The sashes and frames of all the windows, together with their inside shutters and finish, are of cast and wrought iron. The exterior and interior doors are of wrought-iron, with cast-iron frames and architraves. All the wall pilasters that support groined arches are of brick, and are fitted with cast-iron capitals and bases. The inside architraves of all the windows are of cast-iron. All the exterior walls are built hollow from bottom to top, their entire length.

The architect of the enlargement was Mr. Gridley J. F. Bryant: the contractors were Messrs. Cushing and Mack.

The Legislature of Massachusetts had until 1840 a greater number of members than that of any other State of the Union, but the Senate was then reduced to forty members, and the number of representatives to 356, elected by towns of more than 1,200 inhabitants. Of the representatives, Boston sends thirty-five and Lowell nine. The right of election is in every male citizen, twenty-one years of age, who has resided within the State for a year, and within the town or district for which he desires to vote for six months preceding the election.* Massachusetts sends twelve members to Congress. Boston, the capital, where the means of education are very widely diffused, has been always favourably distinguished by her attention to literature.

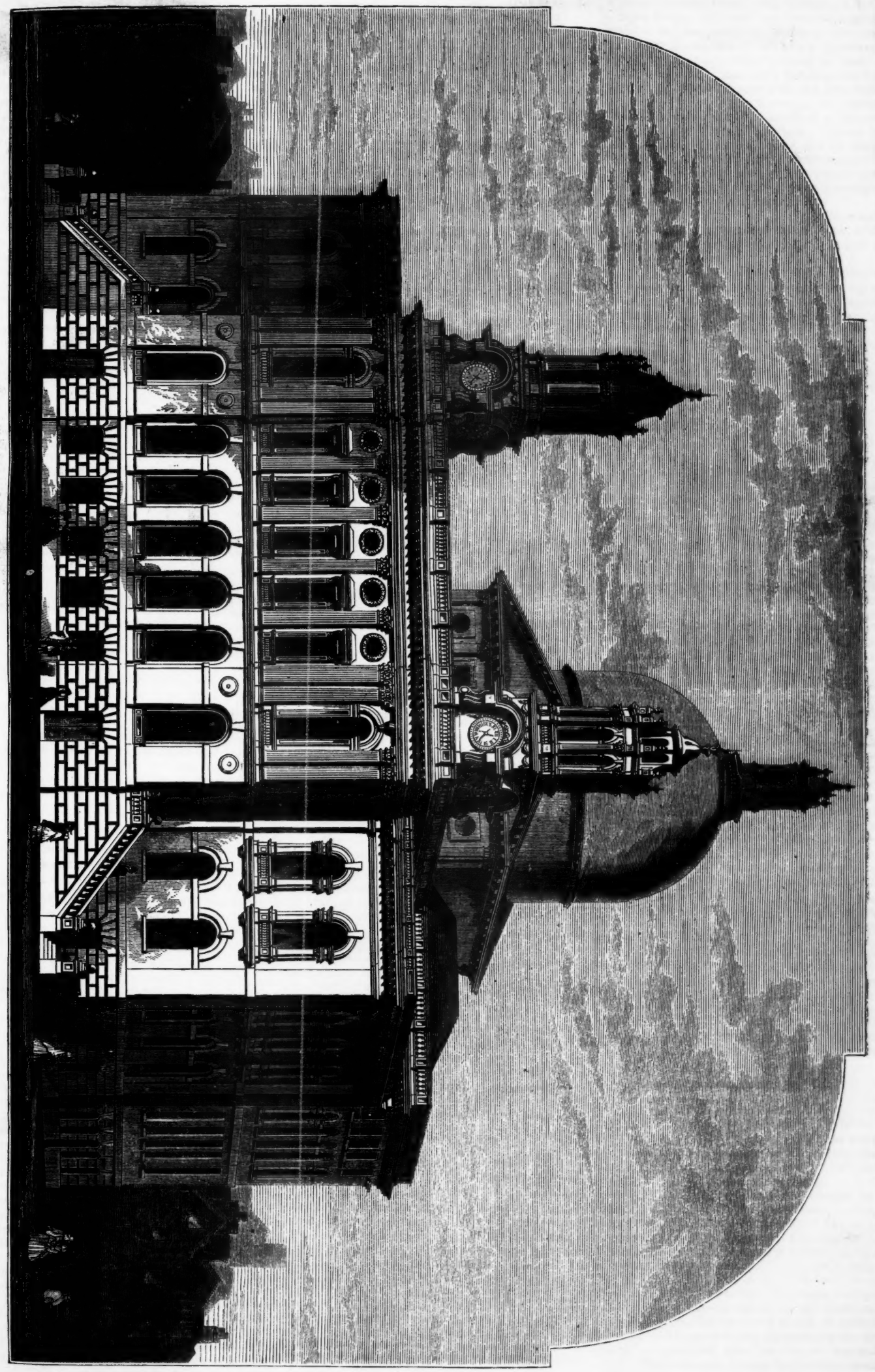
* M'Culloch.

THE PLAN OF THE WAR-OFFICE COMPETITION.

A correspondent says,—"The idea of paying every competitor as proposed in the War Office case—the designs all remaining the property of the party proposing the competition, is not new and did not originate with Sir B. Hall." The scheme described in last week's *Builder*, is that which was acted upon under Professor Hosking's advice in the case of King's College Hospital. The author of the preferred design was employed and paid his 5 per cent. Each of the other competitors (four in number) had eighty guineas, and the designs all remained the property of the Hospital authorities. But the idea was devised, broached, and set forth by the gentleman named, in 1842, in his introductory lecture at King's College, London, on Architecture."

When we said last week, speaking of the matter, that "the idea originated, we believe, with Sir Benjamin Hall, who deserves credit for desiring to render such new buildings as may be required by the Government, worthy of the country," we meant simply the idea of *competition*, not of the manner of competing: our readers are fully aware that the mode has been adopted before.

BURY ST. EDMUND'S CEMETERY.—With reference to the time occupied in the works, and the money spent, a writer, "Anti-Humbug," upbraids the burial board with breach of faith towards the other parties who tendered.



THE STATE-HOUSE, MASSACHUSETTS.—Mr. Gridley J. F. Bryant, Architect.

REPORT ON THE BRITISH PORTION OF THE PARIS EXHIBITION.

A LONG and able report on the British portion of the Paris Universal Exhibition has been addressed by Mr. Cole to Lord Stanley of Alderley, President of the Board of Trade. From this report, which has been published, it appears that, as a whole, the British section, although necessarily much less in quantity, more completely represented the productions of the United Kingdom and its colonies than the Exhibition of 1851. The comprehensiveness of the colonial collections (says the reporter) left little to be desired, and they promise to be of great mutual benefit to the colonies and the mother country. The quality of the machinery displayed was very good; but, owing to the employment of some of the principal machine-makers in preparations for the war, several important kinds of machinery were not represented; and, curious as the fact is, perhaps the weakest of the British portion, considering the real position of its producers with those of the rest of Europe, was the machinery. The principal seats of manufactures were thoroughly well represented, except Leeds, Birmingham, and Belfast. Manchester appeared much more completely represented than in 1851, and its display attracted great attention. Glasgow and Bradford, Sheffield and the Potteries, were thoroughly represented. Nottingham showed well, although not so extensively as might have been wished. Kidderminster well. The glass trade was but partially represented. The furniture, almost wholly from London, was excellent, but not great in quantity. The musical instruments consisted only of a single organ and a few pianofortes. Civil engineering was abundantly illustrated by the best models of the chief works of recent times. The three principal goldsmiths and jewellers made a full display; but the exhibition of watches and clocks and philosophical instruments was less complete than it might have been, several of the chief producers not having exhibited at all.

The number of exhibitors in the industrial branch who finally exhibited was 1,555 from the United Kingdom, and about 1,070 from the British colonies. The number of British exhibitors who demanded space and did not exhibit was 124. The value of the goods sent to the Exhibition was 173,441*l.* exclusive of the goldsmiths' and jewellers' work, which was estimated at 520,186*l.*

The total number of visits to the Paris Exhibition by British subjects was 40,000, of whom 2,768 were persons who obtained workmen's passports from the Foreign-office without payment.

The work of the British portion will be brought to a conclusion with an expenditure not exceeding 40,000*l.* being 20 per cent. less than the sum voted in Parliament (50,000*l.*). This is greatly due to a steady maintenance of the self-supporting principle.

PRIZES FOR WROUGHT IRON-WORK AND STONE CARVING.

THE ARCHITECTURAL MUSEUM.

PRIZES are offered to Art-workmen during the present year for the most successful specimens of wrought iron-work and stone carving, under the following conditions, to which we gladly give publicity:—

No. 1. The Committee of the Museum offer a prize of ten pounds for the best specimen of wrought iron-work.

"The example to consist of a complete panel or portion of a screen of the character of the latter part of the thirteenth century.

The specimens to be such as shall not either in bulk or in manipulation be characteristic of wood or stone.

The workmanship to be a combination of bar, flat, or other forms of wrought iron, forged and united by welding, rivetting, or screwing.

The specimens to exhibit the capabilities of hammered iron as a decorative art, combined with architectural fitness and metallic construction."

No. 2. The base of the Cathedral of Amiens is decorated with sculpture, composed of bas-reliefs in quatre-foils, connected by floral ornament. The photograph, No. 1, at the Architectural Museum, exhibits the arrangement clearly.

Mr. Ruskin will give a prize of ten pounds for the best sculpture of a similar quatrefoil, with included bas-relief, and the two floral ornaments which connect it with the quatrefoils on each side.

"The subject of the bas-relief is to be some incident illustrative of the Crimean War, or of national feeling respecting the war.

It must contain not less than two, nor more than twelve human figures, and of the twelve (if so many are admitted), at least six must be diminutive, merely to represent the presence of the army, or of any multitude.

Foliage or architecture must be associated with the figures, but not in large quantity, and is to be quite subordinate to them.

The foliage both in the bas-relief and floral ornament is to be English, not Oriental.* The architecture either Gothic or Modern English,† not Oriental.

The extreme diameter of the quatrefoil, including the external moulding, is to be 2 feet.

No attention will be paid, in adjudging the prize, to delicacy of execution, or quantity of labour; but solely to ingenious disposition of masses, grace of line, and truth of expression.

The name of the principal figure, or names of the principal figures, are to be legibly sculptured under or over each, in the bas-relief.

If horses are introduced, their pace must not be faster than a trot."

The specimens must be sent to the Architectural Museum, free of cost, on or before the 31st of December next.

The presentation of the prizes awarded for last year will take place on Monday, the 7th, inst. at Canon-row.

THE IRON TRADE.

THE usual assemblage of the ironmasters of South Staffordshire and East Worcestershire, preliminary to the spring quarterly meetings of the trade, was held at Birmingham on 27th ulto. The *Times's* Birmingham correspondent thus speaks of what occurred. "The late questionable state of the iron trade necessarily occupied the attention of the meeting, but comparatively little discussion ensued. It was admitted on all hands that so late as three weeks back considerable depression existed in the iron districts, and that great doubts were entertained as to the possibility of maintaining existing prices: within the last fortnight, however, a marked improvement has occurred, and there are now prospects of renewed prosperity." The meeting resolved unanimously, subject to the approbation of the ensuing quarterly meetings, that the prices fixed in January should be the prices exacted during the quarter. Prices, therefore, now stand nominally as follows:—Bars, 9*l.* per ton; sheets and boiler plates, 10*l.* 10s. per ton; and hoops, 10*l.* per ton. It was stated that there is a better demand for pig iron at improved prices.

In their annual Report of the British Iron Trade, Messrs. Bailey, Toms, and Co. remark, that during the two years of active warfare from which we are emerging, prices have not given way to such an extent as many persons anticipated. The lowest point that rails have touched since the war broke out is 6*l.* 5s. per ton, and Scotch pigs 53s. 6d. per ton.

Their usual table of Exports of Iron for the past year, as compared with the two preceding years, shows the following results, all descriptions being reduced to pig:—

1855.	1854.	1853.
1,619,205 tons.	1,735,136 tons.	1,814,231 tons.

Thus the diminution amounts to about 200,000 tons per annum in the shipments of British Iron to foriegn ports during 1855, as compared with those of 1853. The make of Iron is estimated now at 3,500,000 tons per annum for the United Kingdom. The stocks on hand of pigs in Scotland are estimated to amount to 140,000 tons, and perhaps there are about 20,000 tons of pigs in the North of England. About half the iron produced is now exported, and the remainder used in this country.

The deficiency in American and Canadian orders, has been felt chiefly in the Staffordshire district of late. "This branch of the trade is in an unsatisfactory condition as a whole," remark Messrs. Bailey, Toms, and Co. writing on 28th ulto. or the day after the meeting at Birmingham, and the "marked improvement" of the preceding fortnight notwithstanding.

LIVERPOOL FREE LIBRARY AND MUSEUM.

YOU justly remarked in last week's *Builder*, the probable increase of trouble which would arise from the late decision of the committee of the "Liverpool Free Library and Museum," requiring architects to first compete by sketches to a small scale. So far from *saving* trouble to me, and doubtless, to many others who have got out their designs to the 1-8th scale, it will cause a great *increase* of labour, necessitating the design being got out afresh.

The arrangement, I think, will fail to give satisfaction to any one. The losing competitors will complain that their designs could not be appreciated at so small a scale, which, while benefiting a bald and meagre design, will make an elaborate one appear confused and heavy-looking; whilst to the competitors in the second trial it will be a *very serious evil.* It will be almost impossible to insure fair play.

The committee will probably talk about the designs between the first and second trial, and ideas will thus get abroad which will benefit some at the expense of others. Moreover, I should not be at all surprised if some one of the second competitors contrived to see the collection of sketches. This sort of thing *has been done*, and may be again. Furthermore, it will become known who the chosen parties are to send in the second time, and although their drawings bear only a motto, they will be known.

Under these circumstances, how little chance of fairness is there? Mr. Picton, doubtless, wishes a fair competition; but he will require to be very much on the alert to insure it.

The committee appear to have been frightened by the number of "instructions" applied for, but unnecessarily: probably not a fourth of the applicants would compete according to first arrangement; but now, probably *all* will, or nearly so.

It appears to me it would be much better to revert to the original intention, and I hope those who desire fair play will write to the secretary on the subject.

A COMPETITOR.

THE TOWER OF LIVERPOOL.

A SMALL fragment of the ancient tower of Liverpool, erected in 1404, by Sir John Stanley, has recently been laid bare, by the excavation of the site for new offices, to complete the modern "Tower-buildings," mentioned elsewhere. The only remnant of the tower is a few yards of wall about 3 feet high, standing about 3 feet below the level of the street. The foundations and size of the tower may, however, be clearly traced by the form of the old foundations, which have been cut across by the present excavation. On the south-east corner formerly stood the main building or tower, having two square bastions to the street, the building having apparently been a square tower, measuring each way about 35 or 40 feet, with a square bastion at each angle about 10 or 12 feet each. From this building a gate formerly spanned the narrow street still called "Tower-garden," which extended probably as far as the churchyard of St. Nicholas. On the south-west of the area, formerly the court-yard, are the foundations of a tower, which old views show as a low square tower next the river side; there being then no building between this tower and the river. On the west side of the court-yard are also traces of foundations, one apparently a gateway. The remains on the east and north sides are obliterated: probably they were only a plain curtain wall. These foundations are cut in the red sandstone rock to the depth of one to three feet, and it is singular that below the foundations of the main tower, and under the few courses of large blocks of yellow sandstone that remain *in situ*, are two narrow transverse trenches, which are filled in with small but good bricks, and appear like the foundations of an older building of brick which had been levelled when the tower was embattled in 1404.

The warehouse that formerly stood on the site of the tower was built without any excavation, and the ground appears to have been levelled with the rubbish from the old tower, as large quantities of mortar and fragments of yellow stone were lying above the old foundations. The tower was owned by the Stanley family, and afterwards was purchased by the corporation of Liverpool, and was used as an assembly-room and gaol: it was taken down in 1820.

BUILDERS' ACTIONS.

FINES FOR NON-COMPLETION OF CONTRACT.

A CASE of considerable importance to the building profession generally, was tried at the Galway Spring Assizes, on the 19th and 20th of March, 1856, before Mr. Justice Jackson and a common jury.

The case in question was an action brought by the personal representatives of a contractor, to recover the sum of 655*l.* being the amount of fine for non-completion of contract within the time specified.

The contractor, a Mr. Clarke, of Ballinasloe, entered into a contract, on the 31st of March, 1854, with the Town's Commissioners of Athlone (Ireland), to erect a gas manufactory and to light their town with gas.

There was a clause in the terms and conditions of the contract, that the contractor should be liable to a deduction of 5*l.* per diem fine, for every day the works should be incomplete after the 1st of September, 1854. There was also another clause which reserved to the Commissioners the right of ordering additional works or deviations, without vitiating the contract.

The gasworks were not completed before the 10th

* "For the reason that the prize is to be given to workmanly invention and skill, not to botanical research, nor architectural information; besides other reasons, too many to state."

† "That is to say, either English cottages or old-fashioned streets; or the pure brick square-windowed house common among us, should the subject require squareness of line; but not Greek or Grecized buildings."

of January, 1855, and the Commissioners deducted from the gross amount of the contract 655*l.* for 131 days' fine, at 5*l.* per diem, being the number of days between the 2nd of September, 1854, and the 10th of January, 1855, inclusive.

Evidence was adduced on the part of the contractor, as to alterations and deviations that had taken place during the progress of the works, causing additional works to be performed, which, however, did not exceed in extra cost more than from 100*l.* to 200*l.* The Commissioners' engineer also testified that the works were very creditably executed, and the contract fully carried out, and that the delay arose in a great degree from unforeseen circumstances.

His lordship held that the alterations and deviations were a complete waiver of the 5*l.* per diem penalty, and severely animadverted on the dishonesty of the Commissioners in thus attempting to shield themselves behind such a clause in their contract (seeing that they had suffered no loss by the delay), and thereby deducting the sum of 655*l.* from the payment due to their contractor; and the jury, without a moment's hesitation, returned a verdict in his favour for the full amount claimed, together with the costs of the action.

DESTRUCTION OF THEATRES.

THE fate of a theatre is,—to be burned. It seems simply a question of time, as we have often said before.

The theatre of San Pedro di Alcantara, in Rio de Janeiro, has just been burned down for the third time; and the theatres of Bourges and Nantes have also fallen a prey to the flames. Some particulars forwarded to us from Bourges seem to show the probability that spontaneous combustion was the cause. No person had been in the house for several days previously to the conflagration. In six hours after it was discovered, nothing was left but the walls. Fears were entertained for the Hôtel de Ville and other buildings which adjoin it, but these were saved by great exertions. Two inferences, at any rate, are clear. Every theatre should be insulated; and, as it is almost certain to be burned one day, the most ample means of escape for its occupants should be provided.

The Théâtre de la Monnaie, the national opera-house of the Belgians, which was burnt to the ground in 1854, with much the same suddenness and rapidity as Covent-garden Theatre, was re-opened a few days since with great ceremony. The house has been rebuilt at the expense of the townspeople; and praise has been accorded to the architect, M. Poelaert, who in a very short time has restored the edifice to even more than its ancient splendour.

RECENT AMERICAN PATENTS.

THE following are quoted from the lists of recent patents published in the Journal of the Franklin Institute of Pennsylvania:—

For an "Improvement in Excavating Machines;" J. J. Savage, City of New York. Claim.—"1st. The connecting of the scoop and staff of excavating-machines, to the swinging-post, by vibratory or oscillating arms or links, or their mechanical equivalents. 2nd. The adjustable broom, in combination with the excavating scoop and staff combined. 3rd. The combination of the vibrating or oscillating connecting arms or bars of the scoop-staff, with the feed-chain, windlass, gearing, and sheeve pulley, for the purpose of automatically feeding the scoop downwards, simultaneously with its forward motion."

For an "Improvement in Street Paving Machines;" Thomas Davidson, Jun. Kensington, Pennsylvania. Claim.—"The rammers operating by the lifting-wheels, in combination with the ratchets and pawls, whereby the machine is moved along, either backwards or forwards, as the rammers perform their work. Also, the arrangement of the gearing, whereby the motive power employed to operate the rammers may, by adjusting the wheel, be employed to drive the machine from place to place when the rammers are not in operation."

For an "Improvement in Machines for Sawing Marble Obelisks;" Abraham Straud, Melton, Pennsylvania. Claim.—"The combination of the divided toggle-jointed shaft, with a hinged or adjustable section of the frame, so that two or more saw-frames hung to or driven by said shaft may be worked in an inclined position to each other, but at right angles to the axis of motion, and so that the shaft saw-gates and their guides, as well as the sectional or hinged frame, may all be adjusted simultaneously and held in adjustment."

For an "Improvement in Rotary Pumps;" Thomas Crane, Fort Atkinson, Wis. Claim.—"The combination of the hinged valve, with the eccentrically moving round piston, when said valve is of the shape, and is so arranged in relation to the pump chamber, the offset chamber, the suction pipe, and the eduction pipe, as to render it impossible for said pipes to be, for an instant, brought into connection with each other, during any portion of the revolution of the piston."

For an "Improvement in Gas Burners;" Charles A. Cummings and Cortland Douglass, New London, Connecticut. Claim.—"The interposition, between two jets or streams of gas issuing from the same burner, of a plate."

A HALO.—GLASS SHADES.

AT a *conversazione*, at which art-productions were exhibited, I discovered, accidentally, a mode of forming a halo around the head of a figure, which I think might be turned to account. In order to throw the gas-light upon the pictures and other mural objects advantageously, the rooms, or at least the one in which I found the halo, were lit up with temporary annular pipes, suspended at say 2 feet from the ceiling, and 10 feet from the floor: these rings would be about 4 feet in diameter; and they were perforated for jets perhaps a couple of inches apart, and inside, and somewhat up from them, was an inverted frustum of a cone, of polished tin-plate, for reflecting the light outward, with a downward direction. Below, but eccentrically placed in relation to the circular light, there happened to be a table, on which, with other objects of ceramic art, was a figure in Parian, of an angel or some saint, about a foot and a half high, and enclosed in a glass shade of a cylindrical form, with hemispherical top. I noticed in the dome of the glass, a little above the level of the head of the figure, but over one of the shoulders, the reflection of the circle of jets above; and I perceived that all that was necessary to convert it into a halo of stars to the angel, was the removal of the latter into a central position under the circle,—which, I accordingly obtained, and was attended with the result I anticipated. The halo would be about 1¾-inch in diameter, owing to its near approach to the focal point of the hemispherical portion of the shade. I think it worth while to record the circumstance; because, the effect produced was very pleasing, was something beyond the reach of the sculptor's art, and could easily be repeated. The only limit to the scale of the figure would be the practicable limit as to size in shade-blowing; and the effect might be enhanced, scenically, by placing the figure in a recess, with the actual lights screened from view.

I would conclude with suggesting whether these glass shades might not with advantage be more recognised for their capabilities as architectural features, interiorly, than they are; and with submitting the following questions to the manufacturers: What size of shades are the appliances at present in use adequate to producing? and might not the fan-blast be made available for obtaining shades still larger,—so as to cover statuettes approximating to life-size?

JAMES WYLSON.

METROPOLITAN BUILDINGS ACT.

AT the Wandsworth Police-court, a few days ago, Mr. William Nevill, a builder, appeared before Mr. Dayman, to answer a summons under the New Building Act, charging him with having unlawfully constructed a flue from a boiler in the washhouse of some premises in the occupation of a female named Grossmith, residing at St. Ann's-road, Wandsworth, without giving two days' notice to the district surveyor, as the law required.

The defendant, who is the owner as well as the builder, pleaded not guilty.

Mr. Hiscocks, the surveyor, said, in February last, the defendant erected a flue from a boiler in the washhouse, and the pipe was carried up against the wall under the plate of the roof. The plate was made of wood, and the pipe was so close to it, that when he examined it, he found the wood quite warm from the heat, and the tenant told him that she was afraid to go to bed for fear of the house being burnt down. He had surveyed the house at the time of its erection, and the flue was not then constructed. The defendant had never given him notice of his intention to construct the flue; besides which, it had not been constructed according to law; that is to say, it was too near the timber of the house.

The defendant said the flue was built four months ago, and was at least 4 inches from the plate.

Mr. Dayman wished to know if the surveyor had any evidence to prove that the flue was built in February, or at any time in this year; for if he had not, the case could not be made out, inasmuch as the old Building Act was repealed by the new one, which only came in force on the 1st of January.

Mr. Hiscocks said he had no evidence, with the exception that, when he examined it in February, the mortar appeared quite fresh, and the whole appearance of it indicated its recent erection. The tenant told him that it had only been built a fortnight.

Mr. Dayman said that evidence was compatible with the statement of the surveyor; but according to Mr. Hiscocks' evidence, he could not tell the exact time the flue was built when he inspected it; and it might have been earlier than he (Mr. Hiscocks) believed, and then, a fortnight before that would bring it very near to December.

The defendant said it was not likely he should build a flue in such a manner as to jeopardise his property.

Mr. Dayman said the case was not made out, and he therefore dismissed the summons.

The correctness of this decision seems to us doubtful

ARCHITECTURAL INSTITUTE OF SCOTLAND.

ON Monday, the 17th ult. in the Scottish Exhibition-rooms, Glasgow, Mr. M'Guffie delivered a lecture on geometrical stairs. The lecturer pointed out various particulars, in which the construction of wheeling-stairs was often found to be faulty, and suggested plans whereby the evils he described might be obviated. Mr. Lumsden occupied the chair.

At the next meeting, Mr. Rhind in the chair, Mr. Robert Ritchie read a paper on the "Farm Buildings of the Ancients," which he illustrated by plans of the different kinds of farm-buildings used by the Romans, showing the compactness of construction and minuteness of detail attained in them. After describing the farming processes of the Romans, collected from the Roman agricultural writers, Mr. Ritchie exhibited a plan which he had made of a modern farm-steading for a farm of about 500 acres, to show how steam or water power might be applied to various important purposes.

SELF-MOVING WHEEL-CHAIRS, GIGS, DROSKIES, CABS, &c.

WE have more than once urged the immense utility to the million of some simple, light vehicle, self-moved, or by means of some spring-power easily wound up, whereby London workmen, tradesmen, clerks, &c. could go about their lawful calling, so as to be enabled to live in the suburbs, and to run along in all directions independent of omnibuses, which, moreover, traverse only the main thoroughfares, and are therefore unsuitable in thousands of instances, even were their fares much cheaper than they are. The idea struck us on seeing a workman bowling along on a small velocipede, with his tools in a box before him, and we are astonished that in these "perambulator" times a simple, cheap, self-moving,—traverser, shall we call it, has not been invented, patented, and already become almost universal, amongst all who do not at least "keep a gig." These reflections have just been resuscitated by a correspondent, "Urgeo," who impressively re-urges much the same ideas, but comes even more closely to the point than we have done, by specifying, as an available motor, the India-rubber "Accumulator," of which we some time since gave an account under the head of "Books." By means of the "accumulator," any one could readily "harness" the moving power of his own little vehicle, if otherwise suitable, and "Urgeo" states that these ingenious instruments (suggested, as may be remembered, from seeing an African negro lift an enormous log of mahogany by help of the resilient force of tree-branches, applied by means of wild vine withes), the "accumulators," are now made of even 100 horse power. The precise form of apparatus suggested by our correspondent is that of a barrel fixed to the axle, and round which the "accumulator" is to work, the wheels, we suppose, being made to rotate by means of cog-wheels communicating the power. It is not intended to dictate to inventors, however, how they ought to accomplish the great end in view: all that is desired is to set their wits to work towards the realization of a handy "traverser," "accumulator," or whatever it may be called, and "Urgeo" suggests that others should contribute their thoughts to the *Builder* on this important subject.

DESECRATED CHAPEL, COW HONEY-BOURNE, GLOUCESTERSHIRE.

PAINFUL as it is at all times to witness an edifice once dedicated to the honour and worship of God, dilapidated and deserted, it becomes especially so when we find it situated in a populous village, and desecrated by being converted into mean cottages, with hovels and pigsties erected against its walls.

How or when the interesting chapel of Cow Honeybourne, near Evesham, became reduced to its present state, is unknown. Rudder's "History of Gloucestershire," published in 1779, states that there was formerly a chapel here belonging to the deanery of

Campden, but that it had been long converted into a poorhouse.

It consists of chancel and nave of the Middle-pointed style, and a Third-pointed western tower. The latter is entire with the exception of roof, floors, and pinnacles. There are some good windows, but blocked up and much mutilated, except the eastern one, the tracery of which is very perfect. On the north side of the chancel is a three-light transomed window, whose mullions and tracery appear to be of different dates, the former being executed in the same kind of stone as the Middle-pointed work, and the latter in the same as the tower. The south doorway is enclosed by a chimney on the outside, and converted into a fireplace.

The plan originally comprised chancel, nave, tower, and *north aisle*. Some piers and other remains of the latter were to be seen a few years since, but not a trace of them now remains, or of the chancel arch. We observed squinches across the angles of the tower, as though a spire had been contemplated, though probably never erected.

These "chapel cottages" are the property of the parish, and will be offered for sale by auction in a week or two. It is earnestly to be wished that some one could be found to purchase and rescue the chapel from the disgraceful state we now see it in. If there are at present obstacles in the way of its being restored to its former sacred use, it would be well adapted for a school. It is within a mile of the Honeybourne station of the Oxford, Worcester, and Wolverhampton Railway. The hon. secretary of the Worcester Architectural Society will gladly answer any inquiries respecting this. The total cost of restoration is estimated at 300*l.* The nave would hold about 150 people. The reserved price for the *chapel-cottages* is 170*l.* If converted into a school-room, and to be used for service as well, it would be most useful, we are told, there being no place in the two parishes where a Sunday-school can be held.

CLEANING AND WHITENING FLOOR-BOARDS.

Let the boards be cleansed as much as possible from all superficially-adhering impurities by sand, soft-water and friction; and afterwards cover the whole surface with a mixture of about three parts of pipe-clay (or any other non-ferruginous clay), and one of commercial "chloride of lime," rubbed up with water to a creamy consistence. This may remain on the wood for from twelve hours to three or four days, according to its previous condition: when at length removed, I think "F. H. E." will thank me for the visible improvement.

Grease of any kind may be extracted from boards by the application of moistened clay,* of the kind before-named, to the contaminated portion of their surface: it should be left in contact with them at least twenty-four hours. A little solution of ammonia, added to a clay, greatly increases its power in this particular; but, as the ammonia quickly volatilizes, it should be added several times each day.

Ink stains and "iron-mould," quickly disappear under a treatment of oxalic acid and water: if a large quantity of ink has been spilt, a previous wetting with solution of sulphuret of ammonium will materially facilitate its removal. Where a poison cannot be used without endangering domestic animals, tartaric acid must be substituted for oxalic, but the former takes a longer time to act.

Soap should never be allowed to touch unpainted woodwork, if it is thought at all desirable to preserve the natural colour of the latter. I am aware that it is used, and very generally, for all that. Its application to boards is a great mistake, as their pores speedily become filled with a kind of glutinous matter (a combination most probably of the excess of alkali in the soap employed with the natural resin of the wood), which obstinately retains any dirt that may be presented to it, London smoke especially. The result is well known—"Please m'm, them stairs look *so* black, they won't come clean nohow!"

To discover whether soap has been recently employed for cleaning (?) a floor, drag a chair upon it a yard or two, and a greasy-looking track will at once show and denounce the evil. To conclude with a succinct maxim,—Either never use soap to your boards, or wax them well, as on the continent: if the last alternative, don't be surprised if your children tumble down. W. L. S.

The Irish make use of freestone, with a hard round wisp of hay: they wet the hay, and dip it in the freestone, and then scrub their floors; then wash it off when dry. If any sand remains from the freestone, it is brushed off with a hard brush. Nothing can equal this. J. B.

* "Fuller's earth," and all other dark-coloured clays, are apt to stain a nicely whitened floor.

AUSTRALIAN AND TASMANIAN NEWS.

The foundation-stone of a new place of worship connected with the Free Presbyterian Church at Gawler Town, Adelaide, was laid in the beginning of November last. The church will be in the Grecian style of architecture, and will have a tower terminating in an octagonal spire. Tower and spire included will be 62 feet in height.

From the estimates for the Department of Public Works published at Adelaide on 10th November last, we quote the following items of information as to professional remuneration:—Salaries: Colonial Architect and Supervisor of Public Works (forage for one horse and) 600*l.*; Assistant Colonial Architect (ditto), 400*l.*; Clerk of Works, first class (ditto), 292*l.*; Draughtsman, second class, 208*l.*; Clerk, third class, 130*l.* Increase under Clerks' Salary Act, 30*l.* Salaries, provisional and temporary.—Superintendent of Works in Encounter Bay District, 200*l.*; occasional Overseers of Works, 600*l.* Allowances.—In lieu of forage for three horses, as above, 163*l.* 16s.

From an advertisement in the *Adelaide Observer*, it appears that a project is on foot for constructing a line of railway from Adelaide to the sea-beach at Glenelg.

The Melbourne Gas Company Directors had taken their last contract for pipe-laying for the city proper by last advices from that quarter. The successful competitor was Mr. Miles. The shops, it was expected, would be lighted up in a very few weeks.

At Sydney, notwithstanding the temporary dulness of the times, there were, during last November, a great number of private buildings going on, especially in the suburbs, nearly all of which were being constructed on a more substantial plan than many of the buildings in the same localities. Among the public buildings which were progressing rapidly was the new Government Printing-office. It will consist partly of stone and partly of brick, and when finished will have rather an ornamental appearance.——The public abattoirs at Glebe Island were to be completed about Christmas. The bridge to be constructed across Darling Harbour will open up a direct communication with the Glebe, and thus facilitate the conveyance of meat to Sydney, whilst the erection of the abattoirs will remove one of the greatest nuisances from the heart of the city, viz. the slaughter-houses.——The Australasian Steam Navigation Company's Works at Pyrmont were being improved by the erection of a large steam saw-mill, with both vertical and circular saws, and capable of sawing logs 70 feet long. The company had also sent home for upwards of 1,500*l.* worth of new machinery of a larger description than they then possessed. Their large patent slip, opened in May last, had been the means of taking up and repairing about forty vessels, some of large tonnage. ——Active preparations, according to the *Sydney Herald* of 20th November, were being made for a start with the extension of the line of railway from Parramatta to Liverpool, by the contractor for this line. The distance is about 8¼ miles, through a favourable tract of country. The engineering difficulties of this new undertaking being as nothing when compared with those encountered on the Parramatta line, its speedy completion was looked forward to with much confidence. The contract was 76,200*l.*

From Tasmania, or Van Diemen's Land, the only item of news is to the effect that the Hobart-town Gas Company's establishment was being organized, but the erection of the works was not to be commenced till the manager arrived. The company were on the look out for their iron piping and other materials sent out by the *John Bell*, and they were sanguine that the city would be at least partially lighted with gas by May next.

New church schools for Adelaide were projected in November, 1854, and 2,235*l.* have been raised. Lord Digby gave, besides the site, 200*l.* and allows 100*l.* for the old school buildings. The Committee of Privy Council on Education give 1,150*l.*; the National Society, 120*l.*; Winchester College, 50*l.*; and the remainder, upwards of 600*l.* has been raised by subscriptions, chiefly within the town. Mr. Charles Down has taken the contract at 2,060*l.* to be completed by the last day of October next, under a penalty of 5*l.* a day.

The electric telegraph, by last accounts, has just been set agoing, for the first time, in South Australia, Mr. James Macgeorge having commenced the transmission of messages to and from the port.

The whole of the plans, elevations, &c. for the new Houses of Parliament, says the Melbourne or Victoria correspondent of the *Adelaide Observer*, writing end of November last, are now ready, and on inspecting them I am fully satisfied that we shall possess a pile of buildings for legislative purposes on a scale superior to anything that has been hitherto attempted in the colonies. A portion of the extensive pile has been selected for early completion, namely, the chamber and its accessories intended for the accommodation of the Lower House. This is positively to be ready for occupation by the 1st of May. The chamber for the Senate will be proceeded with immediately after, and no delay will occur until the whole edifice is completed. The entire site will be fenced in with corrugated iron, relieved by pillars, before the end of January, and provided with handsome entrance-gates. The site is one of the most elevated contiguous to the city, and its immediate neighbourhood appears destined to be the "west end" of Melbourne.

A log of Western Australia jarrah is attested, in the paper just named, as having been twenty-three years under water in the form of a pile, at Freemantle old jetty, and it is added:—"We have had manifest proofs of the durability of jarrah as applied to naval architecture, public works, and private buildings. Our own gum-trees afford numerous admirable specimens of durable and even beautiful-grained wood; and if it be desirable to purchase from Western Australia, one of the inducements may be the facility of procuring great lengths, as well as timber of undoubted durability."

The value of landed property in Sydney is indicated by a transaction notified in the *Australian and New Zealand Gazette*. At a Government land sale which took place on 27th November, the Sydney Insurance Company purchased the corner allotment of Hunter-street and New Pitt-street, at 101*l.* per foot, being a price unheard-of before in this city, the rate per acre being 70,000*l.* Other lots sold at the same time and in the same line of street, but in less advantageous parts of it—realising from 46*l.* to 75*l.* per foot, and the land disposed of yielding all overhead an average of 42,182*l.* 13s. per acre. When completed, it is added, New Pitt-street will be the finest street in Sydney.

Miscellanea.

Bell-Hanging.—Mr. Denison, if I comprehend his meaning correctly, admits that a bell when hung *high* in the stock, may be more easily *set* than when hung *low*, supposing friction is not taken into consideration. Now we know from experiments that the quantity of friction in such cases is in proportion to the pressure on the *axle*; hence, when a bell is being swung, the friction will be, I presume, increased as the centre of gravity of the bell is removed from the axis: if so, it may be presumed, with some degree of confidence, that if friction were to form an element in the theoretical calculations referred to, the result would still be in favour of the high-*set* bell. The experiment I proposed with reference to two bells, one being hung *high* and the other *low* in the stock, all other conditions being the same, I still think would give a true result. But the experiment on the York bell is far from being conclusive, for we have yet to learn that the York bell *could be set if hung low*. It is true the Erfurt bell has been compared with it; but apart from the reasonable doubts which I have of its *ever* having been set, we are not in possession of all the conditions of both bells, some of which may materially affect the result.—John Burlison.

The Somerset Archæological Society.—The fifth and concluding *conversazione* of the Somersetshire Archæological and Natural History Society took place in the Society's Museum, Taunton, on Monday evening before last, and the proceedings are reported at length in the local *Courier*. Various art-works, including photographs, were exhibited on this occasion, and Mr. Lyte read an interesting paper on photography, in course of which he described his new honey process for keeping the collodion film in a moist state, and so, it was said, preventing its pores from collapsing till the film be brought into use, at any time within a period of four-and-twenty hours, or even for a longer time if a smaller quantity of nitrate of silver be used than in ordinary circumstances. Although this process, however, was published by Mr. Lyte, in June, 1854, there are still doubts as to its utility; but we are glad to hear,—from Mr. Lyte's paper and from his statement that a number of the photographs exhibited were prepared from collodion films which had undergone the honey-moistening process,—that the discoverer continues to have confidence in it.

Gas Fitters' Mutual Association.—The objects of this Association are, to advance the interests of its members by a mutual interchange of opinion; to enable them to obtain the best information on the various projects before the public, and the advantages likely to be gained by the inventions put forward as improvements; to give an impetus to the more extensive consumption of gas-lighting in private houses; to encourage its general adoption for culinary and heating purposes; to acquire information on the simplest and most efficacious modes of ventilation in connection with this mode of lighting; and to disseminate useful information on all matters connected with this subject to its members, and, through them, to the public. With such ends in view we cordially wish it success.

THE SMOKELESS FIRE.—Having done me the honour to insert in your journal of March 15th a few remarks on the new mode of fire-lighting, and its probable consequences, permit me to submit a few extracts bearing on the subject from a work I read with much interest, and to which I referred, viz. "Eckstein on Chimneys," &c. Weale. 1852. The author is now deceased. His father was an eminent painter, and his grandfather, I may remark, sculptor to Frederick the Great of Prussia. Many attempts have been made, with more or less success, to consume the smoke from coal fires. The best grate I ever saw for the purpose, as also for the more perfect combustion of the coal (patented about 1813,—the Cutler Stove), was so constructed that when the bottom (which was a *plain plate*, instead of a *grating*, and which was made to rise and fall by means of a spindle and two chains), was lowered, it formed a box capable of containing a supply of coals for twenty-four hours. The fire being lighted on the top of the coal, the heat caused it to emit the gas, and supply the fire above it, *as oil would a lamp*—thus the gas having to pass the fire previous to its ascending the chimney, the greater part of it was consumed, and very little smoke could pass up the chimney. Desirous to obtain farther information respecting this stove, I called on the patentee to ask him if it was possible in such a grate a fire could be used with economy, which, when burning well, was like a furnace?" [a proof it will suit for kitchens.] He replied that it could, explaining that a large portion of the heat was occasioned by *gas*, which, in a common stove, would go up the chimney. This I readily acknowledged; for when we consider the quantity of inflammable matter which accumulates in a flue, and which is only a very small part compared with what passes off at top, and impregnates the air, we must be sure that *the loss of fuel is immense*, while the combustion of the patent grate was so perfect, that the chimney did not even require sweeping." He adds, "I have seen the same principle applied in a common stove. Mr. Aitkin, secretary to the Society of Arts, used to have a grate in his sitting-room filled with small damp coal, and the fire made at the top, for the purposes of economy, consuming the gas, and requiring little or no attention. He says he had a fire to breakfast by: if he required to use the room in the forenoon, he raised the coals a little, as also at dinner time: towards evening the lower part became ignited, and no more coals were required. The remaining cinders were used next morning to make the fire at the top of the coals." This economical fire is spoken of as "burning gradually downwards, with little consumption, and requiring scarcely any attention." Here, then, is the *Builder's* Smokeless Fire, which, if generally applied, would save at least two million tons of coals per annum, calculating the consumption for the metropolis at five millions, and a fabulous amount in washing, doctors' bills, &c. and might enable us to remove those hideous additions of all sizes and forms to the already ugly million chimney stacks and pots. I may add the old stove maker and author, after fifty years' experience, came to the conclusion that the bottom of every ordinary grate should be *partly* or entirely closed, instead of an open grating.—E. R.

LIGHTING COAL-PITS WITH GAS. — The introduction of gas into the villages of Gildersome and Drighlington, three months ago, has led to the lighting of one of the coal-pits in the neighbourhood. There are at present about a dozen lights burning in a deep pit; and the practice, it is anticipated, will be extensively adopted in the mining districts of the West Riding. Care, of course, will require to be taken against the occurrence of fire-damp, or the natural *gas* of coal-pits themselves. This will probably be effected by the application of the Davy lamp to the gas-lights.

GAS AT STOCKTON.—A new gas company has been formed for Stockton and its neighbourhood, to be incorporated under the Joint Stock Companies Act and the Limited Liabilities Act, with a capital of 6,000*l.* This company proposes to light the town, and to give gas to private consumers at a great reduction in price. This they calculate they will be enabled to do by the saving of parliamentary expenses, in consequence of the powers given by the Act alluded to, and by adopting the modern improvements in the science of gas-making. The works, it is expected, will be in full operation before the autumn. Meantime the Stockton Gas Company have issued a notice that, after the 1st of October next, the price of gas in the borough of Stockton will be reduced from 4s. 6d. to 2s. 6d. per thousand cubic feet.

LUNATIC ASYLUMS IN MIDDLESEX.—Plans by Mr. Harris, for additions and alterations at Hanwell Asylum, to cost 67,300*l.* have been referred back to the Committee of Visitors, to obtain the sanction of the Secretary of State. A proposition with respect to certain alterations at the Westminster House of Correction, at an outlay of 11,000*l.* is under consideration.

OPENING OF NEW SCHOOLS AT STOCKPORT.—On Good Friday the Hanover Schools, at Lancashire-hill, were inaugurated by a *soirée* and other proceedings, of which a full report appears in the *Stockport Advertiser* of last week, from which the following details, as to the building, are collected. The design was furnished by Mr. J. C. Gilbert, of Nottingham, architect. The building is a simple structure of brick. Messrs. Brown and Rittson, of Stockport, builders, were the contractors, and also provided the whole of the internal fittings. The cost altogether will, it is believed, exceed 3,000*l.*; of which sum about 1,200*l.* is still wanting to liquidate the outlay. The building covers an area of 81 feet 6 inches long by 43 feet broad, or equal to 390 square yards. The height, from the floor of the class-rooms to the apex of the roof, is more than 50 feet; and the accommodation which has been obtained comprises, on the ground-floor, an infant-school, 19 feet 6 inches by 16 feet 9 inches; three class-rooms, each 16 feet 9 inches by 11 feet; and a large one, 22 feet 6 inches by 11 feet 6 inches; all of which rooms are 14 feet in height. The next floor is chiefly occupied by the large hall for assemblies, 72 feet 9 inches by 40 feet, with a gallery at one end, and capable of accommodating 600 children in classes, with their teachers. The height of this room, from the floor to the apex of the roof, is 34 feet. The space in the chapel, immediately beneath the gallery, is used as a communion-pew. The whole is heated by the circulation of hot water, and lighted by gas. No attempt has been made at external decoration; and in the interior the effect is to be attributed solely to the combination of the materials absolutely necessary for the construction. No portion of the building consists of the imitation of any material not actually present.

THE ROYAL SCOTTISH SOCIETY OF ARTS.—The ninth meeting for the session of the Royal Scottish Society of Arts was held in their hall at Edinburgh, on Monday before last, Mr. Elliot in the chair. Mr. Edward Sang laid on the table a gyroscope, presented to Professor Playfair by M. Arago, and read a communication made to the Society about twenty years ago by himself, detailing some experiments made with this instrument, which had lately been attributed to M. Faucault. The communication was referred to a committee. Some account of artistic lithography was then given by Mr. Alex. Macpherson, F.R.S.S.A. A description and drawing of a railway-lighthouse signal, by Mr. Andrew Carrick, Glasgow, were brought before the meeting by the secretary. With the small size of the drawing, and the intricacy of the description, there was a difficulty in understanding Mr. Carrick's scheme completely. Mr. Bouche stated his objections to any self-acting signals. The communication and drawing were referred to a committee.

LODGING-HOUSES, VAUXHALL-ROW, LAMBETH.—With H.R.H. Prince Albert, I have felt "a lively interest" in the above scheme, and I should have been delighted had you been enabled to announce, in the observations on the subject in last week's number of your valuable publication, that occupants had been found for these model dwellings; but I am constrained to remark, that I fear it is to be apprehended the cost of the construction will be found a bar not only to their letting at rents which will afford even a moderate return for the expenditure, but, however philanthropic owners of property may be, no hope is held out to them "to follow an example," where they must in vain expect an ordinary return only for their capital. To the revenue of the Duchy of Cornwall, this is a matter, doubtless, of little consideration; but the less-fortunate owner of property can only be expected to build houses likely to find tenants; and the dwellings in question, though completed months ago, from some cause or other, are, as yet, as you may probably be aware, without an inhabitant. A very large class of the poor can ill afford to spare more for rent than 3s. 6d. or 4s. a week from their hard-gained earnings, and I cannot but think that he will perhaps be the greater benefactor to the poor who shall erect neat and comfortable residences for them, at rents which they are in a situation to pay, and thus save them from being driven to those haunts of misery and wretchedness, the existence of which we all so much deplore.—LAMBETH.

PAINTERS' STRIKES.—The journeymen painters of Glasgow have struck work for an advance of wages. The masters resist the demand, and advertise for good workmen, at 22s. 6d. a week, with constant employment. At Dundee, too, a number of working painters having presented certain demands to their masters, which the latter declined to accede to, are now on strike. Placards are posted by them warning off stranger operatives. One of the demands is said to be, that all hands be paid alike, and other requirements are described as being scarcely less preposterous. The masters are bringing workmen from Glasgow and elsewhere.

NO PAYMENT FOR IMPROPER WORK.—At the Birmingham County Court, March 26, in the case Taylor *v.* Johnson, the plaintiff claimed a sum of 1*l.* 12s. for a cast-iron column supplied to defendant's order. It was made out to the satisfaction of the learned judge (Mr. Dinsdale), that the pillar, when delivered and placed on the site intended for it, had been, by some misconception, as was said, made too large: in place of five inches, six inches and a half was the size sent in. Defendant had offered to take the column if some reduction was made, but plaintiff refused. His honour took a careful review of the evidence on both sides, and gave his verdict for the defendant.

THE CHAPTER-HOUSE OF SALISBURY CATHEDRAL.—The readers of the *Builder* will perhaps be concerned to know that an announcement has been recently made to the public, by a correspondent in one of the Salisbury papers, of the intended "restoration" of the well-known series of sculptures, illustrative of Bible history, on the walls of the cathedral chapter-house of that city. As this course, if adopted, must necessarily destroy the interest which at present attaches to these remains, as relics of Early English art, and render them worthless, both to the architectural student and antiquary of future times; it is sincerely to be hoped that the attention of the public having been called, through the medium of the press, to this important matter, some steps may be immediately taken by those persons interested in the preservation of our national antiquities, or some of the societies which have been established for this purpose, in order to prevent the contemplated step, which, if carried into effect, must destroy for ever the interest which these sculptures at present possess as relics of antiquity.—AN AMATEUR.

THE YORK SCHOOL OF ART.—A meeting of the friends of this institution has just been held. The Rev. Canon Harcourt presided; and a report from the committee was read, which stated that the average number of students did not equal that of preceding years, and that the Government had withdrawn the annual grant of 150*l.* and in lieu of it had granted stipends of 32*l.* to the master, and 10*l.* each to two pupil-teachers, so that virtually the school might be said to be thrown upon its own resources: the school, however, was recovering from its difficulties. From the statements of accounts, it appeared that the expenses during the past year had been 285*l.* and that a balance of 19s. 4d. was due to the treasurer. There were also bills unpaid amounting to 42*l.* 4s. 10d. The report was adopted. A subscription has been commenced for liquidating the debts on the institution.

PROPOSED SUBMARINE TUNNEL UNDER THE MERSEY.—A project for uniting Birkenhead to Liverpool has been recently started. The projector intends the tunnel to be treble-arched, one arch being for a double line of railway; one arch for waggons, carts, and commercial carriages; and one arch for quick-moving vehicles, equestrians, and pedestrians. The scheme is a modification of that proposed by Mr. W. Austin, for a passage under the sea from Dover to Calais. The Mersey tunnel, as proposed and arranged, would be about two miles in length, of which, about three-quarters of a mile would be under the river.

THE BRITISH ENGINEERS' BENEFIT SOCIETY.—The object of this Association of employers and employed, is to direct the attention of workmen to the establishment of a benefit society—to ask them to co-operate in establishing such an institution, and to appoint two or more delegates from each of the factories respectively; to communicate the names and addresses of such delegates to the secretary of the institution, and on the receipt of such communication the secretary be instructed to convene such delegates to confer on the promotion of a trades' benefit society. Among the employers who subscribe to the society are Messrs. Blythe, Derwent Foundry Company; Bryan Donkin and Co.; Easton and Amos; H. and M. D. Grissell; Graham, West and Co.; J. and E. Hall; Maudslay, Sons, and Field; Miller, Ravenhill, and Salkeld; D. Napier and Son; John Penn and Son; Spiller and Taylor; Summers, Day, and Baldock; Samuel, Brothers; George Scott; W. L. Tizard; Lewis Ash, &c. The receipts of the society for the last year amounted to 1,615*l.* odd; the liabilities to 413*l.* odd.

ST. PAUL'S, CLAPHAM.—Schools are to be built in connection with St. Paul's Church, Clapham; Mr. W. W. Gwyther, architect. Tenders on quantities supplied have been received, ranging from Clements, 931*l.* to Cable (accepted), 600*l.*

NEW BARRACKS.—A barrack is to be erected at Kensington to hold 200 infantry and a troop of cavalry, at a cost of 15,300*l.*; and new barracks are to be built in the island of Alderney. The new barracks being erected at Devonport are to accommodate two battalions of infantry, and the new artillery barracks 100 men and 100 horses.—*United Service Gazette.*

SOUTH SHIELDS MECHANICS' INSTITUTION.—The members of the South Shields Mechanics' Institution are about to reconstruct the building. The proposed erection will comprise a library and reading-room, with three class-rooms on the ground floor; while on the upper floor there will be a lecture-room, 52 feet by 28 feet, with a retiring room. The stairs leading to the lecture-room are contained in a tower at the north-west angle. The upper part of the tower contains an apartment for the reception of the telescope presented by Dr. Winterbottom. The building will be of brick, with dressings and decorations of coloured bricks to the doors and windows. Mr. R. Lamb, of South Shields, is the architect.

INAUGURATION OF THE ROYSTON INSTITUTE.—Two years ago, the committee of the Royston Mechanics' Institute appealed to the public to assist them in raising a fund for the purpose of erecting a lecture-hall a museum, a library, and rooms for reading and class instruction. The project has been realized, and Royston has what no other town in Hertfordshire possesses—a spacious building, exclusively devoted to art, science, and literature. The building stands at a short distance from the town, on the Newmarket-road, and in the county of Cambridge. It has been erected in the plainest style, of white brick, and constructed more with a view to usefulness than beauty. The building consists of two floors—the museum, two reading-rooms, the library, and the rooms for class instruction, being upon the ground-floor, while the lecture-hall, which is 60 feet by 30 feet, and 20 feet high, occupies the whole of the upper story. The walls are sprinkled with white and black upon a green ground, and this colouring gives a light and airy, although rather cold aspect to the interior of the building. The hall is lighted with a large sun-burner, depending from the centre of the roof, and consisting of seven clusters of nine burners each. The cost of the erection of the building was 1,600*l.* of which sum, 1,000*l.* has been already raised by donations, leaving a balance due of 600*l.* which has been advanced by the trustees and the committee. It is expected that by means of rentals, subscriptions, and the profits of entertainments given in the hall, sufficient funds will be raised not only to pay the interest on the debt, but gradually to liquidate it. On Tuesday before last, a meeting was held in the lecture-hall, for the purpose of publicly inaugurating the new building. The Earl of Hardwicke presided. A full report of the meeting appears in the *Herts Mercury* of last week.

NEW ROAD FROM EDINBURGH TO PORTOBELLO.—The Marquis of Abercorn, it is said, has purchased for 1,200*l.* the houses and ground to the south of the lane leading to Duddingston from the Queen's-park. Government has already agreed to give 2,570*l.* for the construction of a drive to Duddingston from St. Leonards, and the object of the marquis is to secure a continuation of that drive to Portobello.

STATUE OF WATT FOR MANCHESTER.—A subscription has been commenced in Manchester for the erection of a bronze statue to the illustrious James Watt. A cast from a statue already in existence is what is intended, and it is to be placed in front of the Royal Infirmary, as a fellow to that of Dalton. It is calculated that a sum of 1,100*l.* will suffice. Upwards of 700*l.* have already been subscribed.

MANCHESTER AND SALFORD SANITARY ASSOCIATION.—Mr. T. Turner, F.R.C.S., delivered a lecture on "Good living, in its physical and moral aspects," on Tuesday evening before last, in Salford, under the auspices of the Salford committee of the above association. Mr. Alderman Agnew presided. The lecturer expressed the satisfaction he felt when taking part in the Sanitary Association lectures: their influence, he said, was proving most beneficial among the various classes of society. The invariably large attendance proved the conviction among the working classes, that the more educated were becoming increasingly interested in their welfare, and were seriously attempting the impartment of vital physical and moral truths. He held it as an axiom, that there was no such thing as "individual" happiness. The happiness of every member of the human family was dependent on the happiness of his fellows: herein, then, the selfish might discover a reason for endeavouring to promote the general good. Good living was often understood to mean only good eating and good drinking; but "good living" was not to be thus limited. To live well, is to live healthily, to live in obedience to the laws of God and man.—Mr. Powlson announced that the next lecture, to be delivered in the Town Hall, on Tuesday, April 1st, by the Rev. Canon Stowell, would close the present winter's session in Salford.

A T-SQUARE.—Messrs. Stanley and Robinson, of Great Turnstile, Holborn, have sent us a T-square, which appears to possess some advantages over the squares in general. The blade is screwed on to the face of the stock, and so allows the set square to pass freely to the extent of the board.

THE LEWISHAM DISTRICT SURVEYORSHIP.—For the information of those who are interested in the case, The Queen *v.* Badger, which ended in the restitution of Mr. Badger to his office as district-surveyor of Lewisham, we may mention that it is reported in full, with the judgments of the judges, in the *Law Times* of the 15th ult.

PARTIAL FALL OF A WAREHOUSE.—A portion of a paper-mill, in Cottage-row, Bermondsey-road, fell to the ground last week. From twenty to thirty women and girls were on the premises at the time, but were not hurt, the wall having fallen outwards, owing to the pressure of some bags placed against it.

PROPOSED NEW CONCERT-ROOM.—It is stated that a capital of 40,000*l.* is about to be raised in shares, with a view of building a vast concert-room between Vine-street and Air-street, Piccadilly, so arranged as to have entrances from both the latter thoroughfares, and likewise from the Quadrant. Messrs. Cramer and Co. it is added, are likely to take the affair in hand. The piece of ground in question has been on the eve of appropriation so often during the last year or two, that people will place little faith in the report.

CAMBERWELL NEW CEMETERY.—A correspondent comments on the way in which the earth-work there is being done, but he makes assertions to which we cannot give publicity without proof.

"THE CHURCHES OF ESSEX."—Mr. G. Buckler announces a work under this title, wherein the buildings will be architecturally described and illustrated. The churches of Essex are curious specimens of architecture, of great antiquity, and distinguished by peculiar features from those of other counties. The object of this work is to preserve a record of these ancient buildings, by minutely describing them, and illustrating the description by drawings of such details and peculiarities of construction as may prove useful to the architectural student, and of interest to the general reader. Plans will be given to exemplify any unusual arrangement in the parts of the several structures.

TO CURE DAMP WALLS.—We find the following in the newspapers:—Boil two quarts of tar, with two ounces of kitchen grease, for a quarter of an hour, in an iron pot. Add some of this tar to a mixture of slaked lime and powdered glass, which have passed through a flour-sieve, and been completely dried over the fire in an iron pot, in the proportion of two parts of lime and one of glass, till the mixture becomes of the consistence of thin plaster. The cement must be used immediately after being mixed, and therefore it is proper not to mix more of it than will coat one square foot of wall, since it quickly becomes too hard for use; and care must be taken to prevent any moisture from mixing with the cement. For a wall merely damp, a coating one-eighth of an inch thick is sufficient; but if the wall is wet, there must be a second coat. Plaster made of lime, hair, and plaster of Paris, may afterwards be laid on as a cement. The cement above described will unite the parts of Portland stone or marble, so as to make them as durable as they were prior to the fracture.

TO CORRESPONDENTS.

"G. H." (Bielfeld, Wellington-street, Strand).—"Justitia."—"Omnibus Passenger."—"E. K."—"R. K."—"H. B." (we are forced to decline advising).—"Constant Reader" (the wheel is in the front).—"P. E. M."—"W. T."—"A Competitor" (N.B. Seven so signed).—"Zeta" (is in type).—"G. H." (ditto).—"W. H." Preston (ditto).—"Bells" (ditto).—"Mr. B."—"J. S. W."—"J. D."—"N. G."—"Palladio."—"W. H."—"Verax."—"W. L. S."—"S. B."—"H. L." (thanks)—"G. B."—"T. E. D."—"J. C."—"W. P."—"E. Y."—"J. P. J."—"H. H. F."—"B. F."—"A."—"Architect."—"H. B."—"Householder."—"J. G. S" (drawing is left at office, with thanks).—"H. F. L."—"Engineer."—"H. B." Dunfermline (drawings so marked, "*A l'envie*," *are* in the rooms).—"Fairplay."

"*Books and Addresses.*"—We are forced to decline pointing out books or finding addresses.

NOTICE.—All communications respecting *advertisements* should be addressed to the "Publisher," and not to the "Editor:" all other communications should be addressed to the EDITOR, and not to the Publisher.

NOTICE.

FROM and after the 1st January, 1856, the *entire postage* upon all newspapers sent to France, and Foreign countries *viâ* France, must be prepaid: the stamped copy of the paper is of no avail.

ADVERTISEMENTS.

SEWERS OFFICE, GUILDHALL, April 1, 1856.

THE COMMISSIONERS of SEWERS of the CITY of LONDON hereby give Notice, that they will, on TUESDAY, the 15th of APRIL inst. meet to elect one additional INSPECTOR. Candidates must be fully 21, and not exceed 30 years of age. Their testimonials as to previous occupation and character, and certificate of birth, must be sent in addressed to the undersigned on or before SATURDAY, the 12th inst. and they will have to attend a committee for examination on MONDAY, the 14th inst. Salary, 150*l.* They must have been accustomed to works of building, and understand building materials; be able to measure superfices, and square up and abstract dimensions, and must write a fair hand. The person elected must give up his whole time to the duties of the Office. By the City Sewers Act, 1848, each inspector is required to reside within the district to which he is appointed.

JOSEPH DAW, Principal Clerk.

BOROUGH of READING.—LOCAL BOARD of HEALTH.—Notice is hereby given, that the Local Board of Health for the district of the Borough of Reading, in the county of Berks, require a fit and competent person to execute the duties of SURVEYOR and INSPECTOR of NUISANCES, under the Public Health Act, within the said Borough. The officer to be appointed must possess a thorough and practical acquaintance with works of drainage, sewerage, road-making, and paving; he must be competent to take levels, to prepare plans, sections, drawings, and estimates, and to superintend the execution of all works of the description above referred to, or which may fall within the duties of the office of Surveyor and Inspector of Nuisances, under the Public Health Act, or the Bye-laws of the Local Board. The public lighting of the borough being under the management of the Local Board, the officer will be also required to superintend the same, and to see to the execution of their contracts by the gas companies who supply the gas to the public lamps. The officer will be required to devote his whole time to the service of the Local Board. His salary will be 200*l.* per annum, and he will have a convenient residence attached to the store premises of the Local Board, in which he will reside free of rent and taxes. Any further information respecting the duties of the office may be obtained on application to the Clerk to the Local Board. Candidates must send written applications for the office, with testimonials of qualifications and competency, and with particulars of age and previous occupation; and all applications must be sent to me, endorsed, "Application for Office of Surveyor, &c." on or before TUESDAY, the 8th day of APRIL next.—By order of the Local Board,

THOMAS ROGERS, Clerk.

10, Friar-street, Reading, 20th March, 1856

A SURVEYOR, engaged on a large estate, in one of the most flourishing parts near Town, would take a PUPIL, who would receive instructions and real practical experience in the supervision and measuring of works. A young man of good connections would also find this very advantageous to him, as a first-rate house agency and other business connected with house property.—Address, A. Y. at Cuthbert's, Stationer, 13, Queen's-terrace, Camden-road.

APPRENTICE WANTED (In-door), to a CARPENTER and BUILDER. Term, five years. Premium, 30*l.* with a liberal scale of remuneration.—Address, X. L. Mr. Hawkins, Ironmonger, Bishopsgate-street Without.

ARTICLED PUPIL.—An ARCHITECT and SURVEYOR, in practice in London and its neighbourhood, wishes to take a second ARTICLED PUPIL. With a youth of good education and having a taste for the profession a moderate premium would be asked.—Address, E. A. E. Post-office, Leadenhall-street, City.

TO BUILDERS' CLERKS.

WANTED, by a London Firm, an experienced Person, thoroughly conversant with the duties of a BUILDER'S OFFICE, and proficient in measuring artificers' work of every branch.—Address, stating age, particulars, and salary required, to X. M. Office of "The Builder."

WANTED, a good DRAUGHTSMAN, who understands perspective. State last employment and terms.—Address, A. M. Office of "The Builder."

TO PAINTERS.

WANTED, a Leading Hand, who has been used to a West-end Jobbing Business.—Apply by letter, stating where last employed, wages required, &c. to B. C. 3, Curzon-street, Mayfair.

WANTED, a competent ASSISTANT, who is a good surveyor, leveller, and draughtsman.—Address, stating terms, where last employed, and age, with references, to A. B. Office of "The Builder."

TO PAINTERS AND DECORATORS.

WANTED (in consequence of the sudden death of the late foreman), a FOREMAN, who is thoroughly acquainted with the practical parts of the painting and decorative business. He must be of good address, an active man of business, write a good hand, and be competent in measuring, abstracting, and estimating. Satisfactory references as to sobriety, honesty, and competency, both practical and theoretical, will be required. No one need apply unless he has previously filled a similar situation.—Application to be made to Mr. H. J. BUCHAN, House Decorator, Southampton, stating age, if married, rate of wages required, and full particulars of qualifications.

WANTED, a CLERK of WORKS, qualified to superintend the erection of a gas works.—Applications by letter, stating former occupation, salary required, and with copies of testimonials, to be addressed to Mr. BIVEN, the Engineer, at the Stockton Gas Consumers' Company's Office limited), 131, High-street, Stockton-on-Tees.

TO WOOD ENGRAVERS.

WANTED, TWO or THREE first-class WOOD ENGRAVERS. Those who have been accustomed to engrave after Gilbert and Birket Foster will be preferred.—Apply by letter, enclosing proofs (which will be returned), and stating terms, to Messrs. A. and J. MACPHERSON, 12, Royal Exchange, Edinburgh.

TO BUILDERS' CLERKS.

WANTED, in a Builder and Contractor's Office in the country, a CLERK, fully qualified to prepare drawings, take out quantities, make estimates, measure up works, and the general routine of a builder's office. One who has held a similar situation with a London builder preferred.—Apply by letter, stating age, where last employed, and salary required, to R. S. Office of "The Builder."

TO BUILDERS.

WANTED, a SITUATION as CLERK in a BUILDER'S OFFICE, by a young man who has filled a similar situation with London builders for some years. References unexceptionable.—Address, X. Y. 151, Minories, City.

TO CARPENTERS.

WANTED, to ARTICLE HIMSELF to the above Trade, a Young Man, aged 20; has been in a gentleman's family six years; with a good character.—Apply, G. H. 14 King-street, Long acre,

TO CABINETMAKERS AND UPHOLSTERERS.

WANTED, a SITUATION, by a practical Man, who has had from eight to nine years' experience as manager of extensive cabinet works, has been accustomed to make working drawings, also costs of furniture, and keep the books in connection with the manufacturing department. Satisfactory references will be given.—Address, A. B 53, Albany-street, Regent's-park.

TO ARCHITECTS AND BUILDERS.

WANTED, by the Advertiser, who has served three years in London at the bench, and two years in office and buildings, a SITUATION, where he would have an opportunity of learning the general routine of office work, surveying &c.; he is a good draughtsman. A moderate salary only expected.—Further particulars and references may be obtained on application to L. B J. Cowing's Library, Chipping Barnet, Hertford-shire.

WANTED, by a good DRAUGHTSMAN, an APPOINTMENT. Is very expert in plans of every kind, plan writing, tiles, colouring, and linear drawing of every variety. Engaged for eighteen years past by eminent engineers, surveyors, and the Government, executing various plans of estates, towns, railways, docks, &c.—Apply by letter to R. THEODORE, 4, Trafalgar-square, Charing-cross.

WANTED, a SITUATION as BUILDER'S FOREMAN, or CLERK of WORKS.—Address, A. J. Office of "The Builder."

WANTED, by a steady Man, 36 years of age, a SITUATION as PLUMBER, GLAZIER, and PAINTER. Can be well recommended.—Address, W. S. 19, Green-street, Stepney.

TO ARCHITECTS, SURVEYORS, AND BUILDERS.

WANTED, by the Advertiser, a RE-ENGAGEMENT in either of the above Offices. He is a good draughtsman, accountant, can take out quantities, superintend and measure works, and perform the duties usually required. Apply, L. E. F. 1A, Arlington-street, Camden-town.

TO ARCHITECTS AND SURVEYORS.

WANTED, a SITUATION, by an Assistant, who has been accustomed to get out fair and detail drawings, understands perspective, and has had some experience in taking out quantities, &c.—Address, Y. Z. Mr. Wood's, Post-office, Wyatt's-corner, Harrow-road, Paddington.

TO PLUMBERS AND BUILDERS.

WANTED, by a Young Man, a permanent SITUATION as PLUMBER and GAS-FITTER; can undertake painting and glazing, if required.—Address, B. B. 87, Vauxhall-walk, Lambeth.

TO CONTRACTORS, BUILDERS, &c.

WANTED, by the Advertiser, a SITUATION as AGENT or GENERAL MANAGER. References.—Apply to G. W. L. Office of "The Builder."

WANTED, a SITUATION as CLERK of WORKS; is well experienced in all the branches of building, is a good draughtsman, and has first-rate testimonials.—Address, A. B. 28, Harrington-street, North, Hampstead-road.

TO TIMBER MERCHANTS.

WANTED, by a Young Man, a SITUATION as SALESMAN or FOREMAN in a TIMBER-YARD or SAW-MILL. Has a perfect knowledge of the business, having been brought up in the trade. Can be well recommended.—Address, A. B. 43, Queen's-street, Pimlico.

TO BUILDERS AND OTHERS.

WANTED, by a thorough practical Man, a SITUATION as FOREMAN, in or out of doors, having held similar situations for many years, under some of the largest building firms in London. Testimonials unexceptionable.—Address, A. B. Hunt's Library, 6, Charlwood-street, Pimlico.

TO GLASS-CUTTERS.

WANTED, by a Young Man, a SITUATION as CUTTER at the BOARD. Can do glazing, and has a good character.—Address, R. G. Walling and Son, 141, Waterloo-road, Lambeth.

WANTED, by an experienced CLERK of WORKS, who has just completed an extensive Public Gothic Building, a RE-ENGAGEMENT. Good references will be given.—Address, W. R. Office of "The Builder."

TO BUILDERS AND PLUMBERS.

WANTED, by a person of good character, age 35, a SITUATION as FOREMAN in the department of Plumbing, Glazing, &c. Formerly occupied an important charge for nearly five years, and is thoroughly acquainted with Scotch and English Methods.—Address, P. S. 6, Upper Dorset-street, Bryanstone-square.

TO MASTER BRICK AND TILE MAKERS.

WANTED, by the Advertiser, a SITUATION as FOREMAN in the above Line, having a thorough knowledge of all its branches. Has had fourteen years' experience. Good testimonials.—Address, G. H. No. 4, Glengall-place, Millwall, Poplar, London.

WANTED, by a Practical Man, a RE-ENGAGEMENT as BUILDERS' FOREMAN.—References of the highest order can be given. Locality no object.—Apply to C. B. No. 40, Jewin-street, City.

TO BUILDERS.

WANTED, by the Applicant, a SITUATION in a BUILDER'S FIRM. He understands the general routine of a Builder's Office, and has had some experience in the management of a job. A small salary only expected, as, being young, improvement is the principal object.—Address, T. C. Office of "The Builder."

TO BUILDERS, &c.

WANTED, a SITUATION, by a respectable Young Man, aged 18. Is a good writer and quick accountant. Can have unexceptionable character from his present employer.—For further particulars, address W. H. Post office, Hambledon, Hants.

TO BUILDERS, PLUMBERS, AND GLAZIERS.

WANTED, a SITUATION as FOREMAN, or as WORKING FOREMAN, by a person competent to make out estimates and to keep accounts. Can have eleven years' character from his late employer, a gentleman of the highest respectability.—Address, E. C. Messrs. Cuthbertson's, 49, Lower Belgrave-place, Pimlico.

TO ZINC WORKERS, BUILDERS, AND OTHERS.

WANTED, by an experienced out-door Zinc Worker, a CONSTANT SITUATION. Three years and a half character, if required. Good wages expected.—Apply, by letter, T. E. 51, Penton-place, Pentonville-hill.

WANTED, by a first-rate OIL and SPIRIT GRAINER and MARBLER, a permanent SITUATION in a large firm. Has grained for the trade five years. A thorough practical knowledge of painting, &c. Excellent references. Patterns for inspection recently done.—Address, E. C. 9, Little Britain, Aldersgate-street, City.

TO GAS COMPANIES, ENGINEERS, &c.

WANTED, a SITUATION as MANAGER, or as FOREMAN in the FITTING DEPARTMENT. The advertiser (an Englishman, aged 38) is at present superintending the "fitting up" of Richmond and Portobello barracks, Dublin, under the "War Department," and will shortly be disengaged, his services being no longer required. Satisfactory testimonials as to character, ability, &c.—Address, J. PARKINSON, Foreman of Works, Royal Engineer's Office, Richmond Barracks, Dublin.

TO BUILDERS, &c.

WANTED, by a competent PERSON, a SITUATION as SHOP or GENERAL FOREMAN, or STAIRCASE HAND.—Respectable reference can be given.—Address, post-paid, to A. M. 19, Stephenson-terrace, Caledonian-road.

TO ARCHITECTS, CHURCH DECORATORS, &c.

WANTED, by a quick, artistic Draughtsman and Colourist, a SITUATION with either of the above. He well understands Perspective, and design in Mediæval ornamentation.—Address, H. N. Messrs. Rixon and Arnold's, Stationers, 29, Poultry, London.

A WORKING SHOP FOREMAN, with good testimonials, is in want of a RE-ENGAGEMENT where from fifteen to twenty joiners are usually kept.—Address, H. B. 3, New Crane, Shadwell.

TO ARCHITECTS, SURVEYORS, AND BUILDERS.

AN ARCHITECT and SURVEYOR desires a SITUATION in either of the above Offices. Salary, four guineas per week.—Apply, IOTA, Office of "The Builder."

TO TIMBER MERCHANTS, SAW-MILL PROPRIETORS, AND OTHERS.

A RESPECTABLE Young Man, 25 years of age, is equal and open to fill a SITUATION in a superior manner, as MANAGER, TRAVELLER, or CLERK. References of the first respectability; with an excellent character from last employers.—Address, A. Z. York Cottage, New Church-road, Camberwell.

A YOUTH of respectability who has a talent for drawing, wishes for a SITUATION in any business where such talent could be used to advantage. Board and lodging only required for the first twelve months.—Address, A. Z. 102, Regent-street.

TO ARCHITECTS.

AS CLERK of WORKS, wanted, by a thorough practical Man, a RE-ENGAGEMENT. Has been engaged for the last ten years on works of great magnitude. Testimonials from architects, &c. first-rate.—Address to D. R. Post-office, Penton-street, Pentonville.

TO BUILDERS, SURVEYORS, AGENTS, &c.

A RESPECTABLE Young Man (aged 26 years) requires a SITUATION as CLERK or otherwise. He served his time to a Builder and Surveyor, and has since been two years clerk to a builder. He has a knowledge of drawing and the routine of the office. Salary moderate.—Address, W. S. No. 6A, John-street, Cambridge-heath, Hackney.

TO CIVIL ENGINEERS AND ARCHITECTS.

A PRACTICAL CLERK of WORKS, well experienced in the superintendence of large works, is open to an ENGAGEMENT, either at home or abroad. Can speak French and German.—Address, W. C. 13, Fendall-street, Bermondsey, London.

A GENTLEMAN is desirous of an ENGAGEMENT, where good opportunities may be afforded for learning a general practice. He has lately completed his Articles with an architectural firm in one of the leading provincial cities; and is a neat and fair draughtsman. Salary not so much an object as improvement.—Address, F. I. A. 58, Lupus-street, Pimlico.

TO ARCHITECTS OR BUILDERS.

A CLERK of WORKS, SHOP or FOREMAN of WORKS, of practical experience, is in WANT of a SITUATION; can produce undeniable testimonials of honesty, sobriety, and ability from the gentleman he has served under.—Address, A. B. 28, Gibson-street, Lambeth.

TO BUILDERS, PAINTERS, BREWERS, AND RAILWAY COMPANIES.

A RESPECTABLE MAN, who has had considerable experience in the superintending of painting, glazing, and paperhanging, wishes for an ENGAGEMENT. Can measure work and make out accounts. Age 40. Can be well recommended from his last place.—Address, H. M. 252, Commercial Coffee-house, Blackfriars-road.

TO PARENTS AND GUARDIANS.

A YOUNG GENTLEMAN may become a PUPIL under a Resident Engineer, on extensive Public Works in London.—Apply, by letter, to C. C. at the Office of "The Builder."

TO ARCHITECTS.

A GOOD DRAUGHTSMAN, possessing a knowledge of colouring, and competent to make working, finished, and perspective drawings, desires a RE-ENGAGEMENT at a moderate salary.—Address, Q. E. D. 30, Seller-street, Chester.

TO BUILDERS, ARCHITECTS, &c. &c.

A RESPECTABLE Young Man is in want of a SITUATION in a BUILDER'S or ARCHITECT'S OFFICE; has a good knowledge of drawing, writes a good hand, and has been used to surveying, measuring, and taking out quantities.—Address, T. B. Mr. Cox's, House Agent, 6, Charles-street, Manchester-square.

TO BRICK-MAKERS, GOVERNMENT CONTRACTORS, BUILDERS, AND OTHERS.

A WORKING FOREMAN wishes an ENGAGEMENT, contract or otherwise. No objection to foreign service. Testimonials first class.—Direct, A. B. 18, Charlotte-street, Bagnigge-wells-road, St. Pancras.

A SITUATION WANTED by a first-rate PLUMBER, who is capable of taking charge of work, or any place where confidence is required. Good reference. Town preferred.—Apply to Y. Z. Mr. Wood's, Smith, George-yard, King-street, Maidstone.

THE Advertiser is desirous of EMPLOYMENT as TIME-KEEPER, WHARF CLERK, or to assist in the general work of a builder's or contractor's counting-house. Writes a good hand, and understands accounts. Salary, 25s. per week.—Address, M. Office of "The Builder."

TO CONTRACTORS AND OTHERS.

A PRACTICAL MAN, who has had the management of a firm, is open to an ENGAGEMENT. Thoroughly understands measuring up every description of extra works, taking out quantities, &c. together with making finished or working drawings. Testimonials given.—Address, A. S. 14, Thornhill-place, Caledonian-road, Islington. The country not objected to.

TO ARCHITECTS, STONE CARVERS, &c.

A YOUNG MAN, a WOOD CARVER, wishes to ENGAGE as an IMPROVER in the ornamental stone work.—Address, A. Z. 43, Upper Berkeley-street, Portman-square, London.

TO BUILDERS, CARPENTERS, &c.

A YOUNG MAN of steady habits, a CARPENTER and JOINER, wishes to ENGAGE himself. Wages not so much importance as constant employment.—Address, B. Mr. Wright's Coffee-house, 7, Cumberland-place, Newington, Surrey.

DRAINAGE WORKS.—WANTED, by the Advertiser, a SITUATION as CLERK of WORKS over Public or Private Drainage Work. First-rate testimonials as to ability and character can be given.—Address, R. H. Office of "The Builder."

TO ARCHITECTS AND SURVEYORS.

THE friends of a Youth (aged 16, a Protestant) want to PLACE HIM for five or six years in some country town as INDOOR PUPIL with an Architect and Surveyor doing a good business.—Address, stating terms, &c. to ALPHA, care of Mr. Mawson, 4, Clarence-buildings, Booth-street, Manchester.

TO ARCHITECTS, SURVEYORS, AND BUILDERS.

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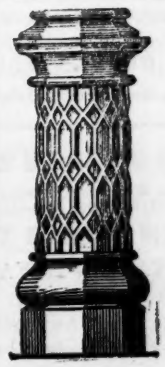

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January 1, 1855.

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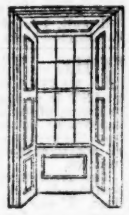

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